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**A NEW TECHNIQUE FOR THE SUBMUCOUS RESECTION OF
THE CARTILAGINOUS SEPTUM.—THE SWIVEL
SEPTUM KNIFE.***

BY WILLIAM LINCOLN BALLINGER, M.D., CHICAGO, ILL.

I present herewith a *Swivel Septum Knife* for the removal of the cartilaginous portion of the septum in the sub-mucous operation. While the idea is novel, and as far as I know, original in the armamentarium of the surgeon, it seems to be of the greatest utility in the performance of this operation. The sub-mucous operation by the technic formerly in vogue, while very successfully performed, had, nevertheless some points which were rather difficult to master. Not least among these, was the removal of the deflected portion of the cartilaginous septum after the muco-perichondrium had been elevated upon both sides. In the old way it was necessary to remove the cartilage piece by piece with cutting forceps, or with knives more or less adapted for the purpose. By this method considerable time was consumed, and the frequent introduction of the knives or forceps often resulted in considerable traumatism of the mucous membrane. I devised this knife to shorten the time of the operation and to do away with the traumatism referred to.

The swivel blade of the knife (Fig. 1) is pivoted to the extremities of the tuning-fork-like prongs of the instrument and swings in a circle. By the resistance of the cartilaginous tissue through which it passes it may be made to cut in any direction in which the distal ends of the prongs are directed. If, for instance, the knife is passed through the cartilage directly backwards along the floor of the nose

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the blade swings backward between and parallel with the prongs, with its cutting edge directed backwards; if the prongs are directed upward the blade swings downward thus presenting its cutting edge upwards; if the prongs are pulled forward the blade swings backwards away from the tip of the prongs between which it is suspended, thus presenting its cutting edge anteriorly to the operator; if, on the other hand, the tips of the prongs are made to pass downwards the blade swings upwards, thus allowing the cutting edge to follow the movement of the prong tips.

All other angles besides those just described are also assumed by the swivel blade as it passes through the cartilage in the circumscribed route roughly outlined in the foregoing description. In other words if the prong tips are made to describe a perfect circle the blade will follow and excise a circular disc of cartilage. Indeed, the blade will follow any movement of the prong tips, thus enabling the operator to remove just the exact portion of the cartilage he deems necessary in order to correct the cartilaginous deformity.

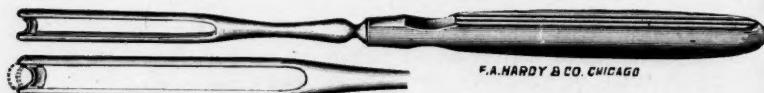


Fig. 1.—Ballenger's Swivel Septum Knife.

The technic of the operation, as I now do it, is after the Menzel-Hajek method with the exception of the removal of the cartilage. In the Menzel-Hajek operation, the cartilage is removed piece by piece with punch forceps; whereas, by my method, it is removed in one piece with one cut of the swivel knife. The time required for the removal of the cartilage after the muco-perichondrium has been elevated need consume but a few seconds; whereas, by the Menzel-Hajek method, it takes from a few to several minutes for its removal. Using a special knife (Fig. 2) I make a curved incision in the septal mucosa of about one inch in length, beginning near the floor of the nose and curving forwards and upwards, as high as I can, through the vestibule of the nose and about one fourth inch posterior to the anterior margin of the cartilage. I have not found it necessary or expedient to make the incision on the convex side of the septum, as is commonly recommended; but I find it advisable to make it on the left side of the septum regardless of whether this is the convex or the concave surface. I do this because it is convenient to use the knife with the right hand while the forefinger of the left is inserted into the right nostril. Having made the curvilinear

incision through the muco-perichondrium on the left side of the septum, I next resort to the semi-sharp elevator of Hajek (Fig. 3) to elevate the anterior portion of the muco-perichondrium from the septum after which Hajek's blunt elevator (Fig. 4) should be used. The semi-sharp elevator should only be used to start the elevation, as to continue its use might result in a perforation of the mucous membrane, whereas, the dull elevator can be used with great rapidity without danger of perforation.

The next step in the operation consists in carrying the anterior curvilinear incision of the mucosa through the septal cartilage to the perichondrium of the opposite side. This is done with a small bistoury, (See Fig. 2) the fore-finger of the left hand being inserted into the right nostril to detect when the cartilage is completely incised. After one has had considerable experience in the incision of the cartilage with a knife, he may not find it necessary to introduce the finger into the opposite nostril as he can readily appreciate when he is through it by the sense of touch or by the resistance felt with the hand holding the knife. The semi-sharp elevator of Hajek



Fig. 2.—Ballenger's Mucosa Knife.

may be used to perforate the cartilaginous septum along the line of the curvilinear incision by rubbing it to and fro in the muco-perichondrial incision, the index finger of the left hand being inserted in the right nostril to exert counter pressure and to detect by the tactile sense when it is completely broken through.

The incision through the cartilage having been made by either of the above methods, the semi-sharp elevator should be inserted through it with the flat side turned so as to lie against the right side of cartilaginous septum, and, while in this position it should be moved up and down and insinuated between the cartilage and the muco-perichondrium of the right side. To facilitate this procedure, the tip of the nose should be turned towards the patient's right side thus exposing the curvilinear incision through the mucosa and cartilage, and making it possible to introduce the semi-sharp elevator on a plane parallel with the septum. After this side is started, the dull elevator is used to complete the separation. Care should be taken to lift the muco-perichondrium from the entire deflected area, as to fail to do so makes it impossible to remove a sufficient amount of the cartilage.

The muco-perichondrium on both sides of the septum now being elevated, the prongs of the swivel knife are introduced through the curvilinear incision, one prong being on the right side of the septum, the other on the left. The instrument should now be directed backwards parallel with the floor of the nose until the posterior limit of the cartilage is reached, when it should be directed upwards and forwards following the outline of the anterior end of the perpendicular plate of the ethmoid to the bridge of the nose, when it should be pulled downward parallel with the ridge of the nose to the upper extremity of the curvilinear incision. In this way almost the entire cartilaginous septum, except the anterior tip which is left to support the tip of the nose is removed. The excised cartilage should now be seized with a pair of dressing forceps and removed through the curvilinear incision. The cartilage thus removed is usually roughly triangular in shape, the acute point of which represents the posterior end of the cartilage.



Fig. 4.

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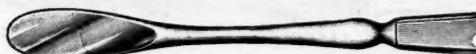


Fig. 3.

Hajek's Elevators.

It is obvious that this method of removing the cartilage is a rational one as it does it with ease, rapidity, and without traumatism or laceration of the mucous membrane.

I also present herewith a number of specimens of septal cartilage removed with my swivel knife for the correction of septal deformities. Some of them have, unfortunately, been broken in handling subsequent to the operations. Since the first three or four operations, not more than fifteen minutes has been required for the completion of any operation, from the first cartilaginous incision to the introduction of the light tampons at the close of the operation. The shortest time was four minutes. In the earlier cases, requiring more time, I was so unfortunate as to lacerate the muco-perichondrium in my endeavors to start the elevation with the semi-sharp elevator. In my later operations, I was *very* careful to not only make the initial incision through the muco-perichondrium, but to carry it a little way into the septal cartilage. By this method, the elevation of the muco-perichondrium was readily done without perforation or laceration.

My purpose in presenting the swivel knife is two-fold in character, first, to call your attention again to the sub-mucous resection of the septum, as it bids fair to become one of the most effective and popular operative procedures for many types of septal deformity; secondly, to call attention to the swivel knife which I believe removes many of the difficulties and objections heretofore met with in the performance of the operation. The knife is extremely simple in its construction, having no complicated parts to get out of order. Its use can be mastered in a single operation, and its use converts one of the most formidable nasal operations, into one of the most simple.

The instrument is made by F. A. Hardy & Co., of Chicago, who exercise great care in its construction with the view of so adjusting the swivel blade that it swings with great freedom between the prongs.

I have also constructed another universal cutting septum knife, made with a fine steel wire stretched between the prongs. While this knife cuts the cartilage, it does not do it as readily as the one



Fig. 5.—Submucous Septum Gouge.

with the swivel blade. I have still another swivel bladed knife mounted upon a single prong the model of which was made by the DeVilbiss Co., of Toledo, Ohio. This knife is shaped somewhat like a reap-hook, the handle of which forms the pivot in the end of the prong. I have only used this knife once and while it was satisfactory in this instance, I must await further trial of it before passing judgment upon it.

A description of the removal of bony deformities is not given because it is not germane to the subject, i. e., the swivel knife. I will present, however, a sub-mucous septum gouge for the removal of bony ridges. (Fig. 5.)

The following claims are made for the swivel knife:

- (a) Extreme simplicity in construction and use.
- (b) Its cutting edge is universal, i. e., that it will cut a circular or any other shaped piece of cartilage from the septum without introducing it more than once between the elevated muco-perichondriums.
- (c) The cutting can be done in a few seconds.

- (d) Its use is devoid of traumatism and shock.
- (e) Healing takes place in a shorter time than by other methods attended by traumatism.
- (f) Its use will not result in laceration or perforation of the muco-perichondrium.
- (g) The entire specimen is removed in one piece and is thus available for inspection, showing the varying thicknesses and deflections of the cartilage removed. (The specimens are best preserved in a solution of glycerine and water to which a little formalin is added.)

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The Occurrence of Sulpho-cyanides and of Ptyaline in the Saliva, in Middle Ear Diseases—ERWIN JÜRGENS—*Monatschr. f. Ohrenh.*, Berlin, May, 1904.

The author describes the test for sulpho-cyanic acid, and reports a series of cases. His conclusions are as follows:

1. Presence of the sulpho-cyanide reaction in saliva taken from Steno's duct with a canula indicates that the corresponding ear is not diseased or only slightly diseased.
2. Absence of the reaction indicated that an existing disease of the corresponding ear is severe or chronic.
3. Diminution in the intensity of the reaction is proportionate to the intensity of the disease.
4. Increase in the intensity of the reaction during the course of the disease suggests a favorable prognosis.
5. Persistent absence of the reaction after the symptoms have subsided indicates that the chorda tympani has been permanently destroyed, or that the disease will recur; reappearance of the reaction indicates that the ear has completely recovered.
6. Where an otoscopic examination is impossible, the absence of the reaction may be of diagnostic value.
7. The presence or absence of ptyaline is of no significance.
8. The reaction is absent in pneumonia, empyema, typhoid fever, rheumatism, influenza and pyæmia.

YANKAUER.

PSEUDOKOUSMA.*

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*Pseudokousma*¹ is a derivative title selected from otological nomenclature as best representing that condition of *false-hearing* in which there is a false perception of pitch in one or both ears. It is to be differentiated from *Diplacusis*, in which a reduplication of the original note, or noise, may be heard in one or both ears; and from *Paracusis*, which refers simply to an abnormal perception of sound. The application of the word *diplocusis* as used by almost all authors is not to be commended. It is indifferently used to designate both double-hearing (*diplocusis*) and false-hearing (*pseudokousma*) and sometimes a composite condition which includes both of these phenomena. Gradenigo² speaks of a *monaural diplocusis* in which the false tone is separated by a definite *harmonious interval* from the true; and of a *binaural diplocusis*, which is sometimes harmonic but occasionally *disharmonic*, the false tone being perceived about one-half or one-third of a tone higher or lower than the true.

The foregoing reference suggests the desirability of greater accuracy in the use of a nomenclature supposed to describe acoustic phenomena. The conditions obtaining in *Pseudokousma* will be illustrated later in a report of two interesting cases; one a physician who has been a superior amateur violin player and for that reason peculiarly competent to detect and describe the slightest variations of tone; the other is that of the writer, who, by reason of the cultivation of a natural gift, has ever been "moved by concord of sweet sounds."

Various writers recognize certain conditions of which *false-hearing* is a factor, but no effort appears to have been made to study the causes, pathology, and treatment of this disease as a disease *per se*, and unassociated with *diplocusis*. Von Wittich³ and Herman Knapp⁴, have reported cases of *false-hearing* in which double-hearing did not occur, both ascribing this condition to a derangement of the harmonious action of the two cochleae. Knapp thought that the lamina spiralis of one was attuned for a different tone-scale than that of the other; while Von Wittich went further and thought that "if the organ of Corti really brings about the perception of a certain tone of a fixed number of vibrations and duration by means of its

* Read at the meeting of the Fourth Pan-American Medical Congress, at Panama, January, 1905.

proper peculiarities of construction, it is conceivable that exudation into the tympanic cavity, which would thereby alter the pressure in the labyrinthine fluid, might through this change of pressure affect the functional integrity of the endings of the nerve-fibres; so that, e. g., fibres attuned for the tone B may come into functional activity along with others corresponding to the tone A, the A fibres being also stimulated by the tone B—(Gruber). Among those who refer false-hearing to the *internal ear* are Helmholtz⁵, Spear⁶, Gradenigo⁷, Hans Daae⁸, Pomeroy⁹, Gellé¹⁰, Bezold¹¹, Hammerschlag¹² and Henson¹³. Among others who refer it to the *middle ear*, and who mostly classify it as a paracusis or a *dipacusis*, are Gruber¹⁴, Blau¹⁵, Bonnier¹⁶, Etrévant¹⁷ and Bishop¹⁸, an associated middle-ear and internal-ear disease being mentioned by Gradenigo and Hans Daae (Christiania). Blau and Bishop are the only two who have referred to a middle-ear cause exclusively. F. Bezold (Munich), estimating the upper tone limit at about 55,000 vibrations, considers that "for the appreciation of this continuous range of tone, there should be, at the peripheral termination of the acoustic nerve, some mechanical auxiliary apparatus which should possess the property of chromatic stringed instruments, and have an element in it corresponding to each individual tone of the whole scale with which it may enter into sympathetic vibration, and which would communicate a stimulus to the nerve-fibres connected with it." With Helmholtz he thinks it probable that "this apparatus is represented by the cochlea, and that the best adapted arrangement for this sympathetic vibration is the membrana basilaris of that organ." The theory that the fibres of Corti are directly instrumental in perceiving tone has given way to the later claim of Helmholtz who, as we see, attributes this function to the membrana basilaris, a view supported by Gruber and Bezold. It is thus readily seen that the theory of the faulty attunement of Corti's fibres (*Knapp*) must be abandoned, and with it that of Von Wittich. The latter's ingenious conception of an exudation into the tympanic cavity, etc., is open to criticism and remains to be clinically demonstrated. Referring to simultaneous activity of fibres attuned to both A and B, the writer would expect to produce from a piano thus stimulated a discord, having no relation to overtones, harmonic or disharmonic.

If we are to accept the conclusions of Helmholtz that "in the radiate fibrous arrangement of this membrane (m. basilaris) there exists a system of cords of different tension and length¹⁹," the contention made by Bezold should be seriously considered. It is not the purpose of the writer to discuss or question this hypothesis,

any more than to establish a landmark for guidance in developing the pathological factors which *result* in a disturbance in the elements of the sound-perceiving mechanism, and in this connection he would suggest the necessity of not losing sight of *tonal subdivisions*, such as the *comma of Pythagoras* (one quarter of a semi-tone), each subdivision, or comma, corresponding to its fundamental in the production of a sympathetic vibration.

In order to disprove the theory of a permanent structural lesion consisting of a faulty tuning either of the fibres of Corti or of the cords of the membrana basilaris as the etiological factor in this disease, it is only necessary to state that recorded cases prove that a disappearance of the pseudokousma has frequently resulted from treatment directed solely to the middle ear. It is not to be denied that a functional derangement of the cochlear structures may be present, co-existing and disappearing with lesions of the sound-conducting apparatus. Whether the ultimate sound-sensation is ascribed to the fibres of Corti, or, as seems to be proven, to the cords of the membrana basilaris, we know that it is to external vibratory impulses that they respond, each being brought into sympathetic vibration with its fundamental, which, in turn, forms a part of the composite tone or noise from without. It follows, then, that since in this disease these cords do not reproduce the exact tone having an external origin, the character of the vibrations must have become altered during transmission.

It is important to determine by what derangement of the sound-conducting mechanism this departure from normal hearing is brought about. Primarily we must consider whether the original sound impulse is composed of regular, periodic vibrations, producing a musical compound tone; or, an irregular succession of sound-waves of varying length and intensity, the resultant sound being perceived by the normal ear as a noise. For the purpose of this paper the latter consideration may be omitted altogether, since the false-hearing under consideration is referred to a curable (?) middle-ear disease of one side only, the tone-perception of the other ear being presumably normal.

It is necessary, therefore, to prove a derangement of the middle-ear function, and in order to do this the structures involved will be briefly considered.

The Membrana Tympani. This structure, like all other vibrating bodies, possesses a fundamental tone. In order to transmit continuous sound-waves at absolutely periodic intervals it cannot act as an independent body, its immediate restoration to a state of compara-

tive equilibrium (rest) being necessary in order to receive and transmit succeeding sound-waves. Should any of these correspond to its fundamental tone, and should it not immediately return to a state of rest, the resultant transmitted impulse would be intolerable, hence it must be muffled by being connected with a body of greater density capable of receiving the impulse. This is accomplished by its connection with the ossicular chain. Another requirement is that there should be no change in the structure or relations of the membrane, the preservation of its normal tension, direction, thickness and density determining its value as a receiving and transmitting agent. It is readily seen how a departure from the normal concavity (outward), either through retraction or relaxation, can modify the sound-impulse. This applies, as well, to localized areas affecting the normal thickness of the membrane, any increase or decrease of density or tension necessarily interfering with regular, periodic vibration. Of more importance are the retracted areas caused by adhesions. This mechanical fixation completely alters the vibrating quality of the membrane, its irregular surface now presenting vibrating areas of unequal density and tension, each possessing its fundamental tone after the manner of the parent membrane.

The *Ossicular Chain* is of importance in that it helps to control the inward excursion of the drum, muffling it, receiving its impulses and assisting in their transmission to the sound-perceiving apparatus. Any change in the direction of this transmitting force, or impairment of ossicular mobility from any cause, would result in an altered function of the labyrinth and would form an obstacle to tympanic compensation.

The *Intra-tympanic muscles* constitute the "balance of power" in the middle ear. Antagonistic in their directed force, their accommodative and selective power permits a normal adjustment of the relations between the middle and internal ear, the *stapedian curb*¹³ influencing labyrinthine pressure by controlling the impact against the *membrana obturatoria*.

The *M. Obturatoria* and the *M. T. Secundaria* are important in that any departure from their normal elasticity would interfere with tension and compensation and modify the protection of the labyrinth.

The *Eustachian tube* is no inconsiderable factor in the mechanism of audition, since upon its patency, in the absence of other lesions, depends the normal physical adjustment of the intra-tympanic structures, as well as the ventilation of the confined air-spaces.

The *Tympanic cavity* subserves many important functions. Its contained air, being capable of rarefaction and condensation, provides for the regulation of intra-tympanic tension, and, acting as an elastic buffer, or cushion, to the incursions of the drum, maintains the equilibrium of that structure. It not only affords lodgment to the ossicular chain, but, aided by the M. T. and t. muscles, furnishes the resistance necessary to maintain its integrity. Further, it serves both as a *resonance-chamber* and a *sounding-board*, functions which will be referred to subsequently in connection with the mastoid cells.

The *Mastoid cells*. These, in so far as audition is concerned, constitute a part of the middle ear. Contrary to the belief of most physiologists, the writer is convinced of their importance in the function of hearing. Their connection through the antrum with the middle ear affords a material increase in the capacity of that structure as an air-chamber, while, through the elastic resistance of their contained air, they supplement the intra-tympanic air in protecting from external violence the tympanic and labyrinthine contents. The importance of these cells in supplementing the tympanic cavity in its capacity as a *resonance-chamber* and as a *sounding-board* must be conceded, the perception of very low tones being undoubtedly aided by their presence. Their obliteration from various causes, such as confined pus, granulation tissue, eburnation, or structural diploetic changes, at once modifies their functions and contracts the auditory field. Evidence of such a contraction is afforded in numerous recorded cases of impaired audition in which a considerable gain in hearing-power followed the re-establishment of a chronic purulent otorrhoea. The gain in these instances was undoubtedly due to the removal of an obstruction to the drainage of the cells. In the writer's experience improvement in hearing followed the removal of large masses of granulation tissue from the cells in cases where neither pus nor a perforated drum existed. In one where the integument was sutured and the wound hermetically closed at the conclusion of the operation, prompt restoration of comparatively good hearing was established. Interference with audition must certainly occur as a result of sclerosis, eburnation or diploetic formation in the mastoid, but particular attention is not drawn to it on account of the slow progress of the disease and a corresponding loss of hearing-power. As a result of these investigations, as well as from the information derived while conducting experiments with the stem of a tuning-fork applied to various regions of the mastoid process in the case about to be cited, the

writer is confident that the integrity of the normal air-spaces is necessary to the maintenance of a perfect relationship between the sound-conducting (so-called) and the sound-perceiving mechanism. Further investigations along this line may possibly demonstrate the propriety of utilizing the stem of a tuning-fork as a diagnostic agent in determining the character of a particular mastoid lesion, e. g. *eburnated tissue*, of which Gruber says: "We possess no mode of examination which affords any tolerably trustworthy evidence of the existence of this condition. Neither palpation, percussion, nor auscultation of the region yield the slightest information in this matter" (Laenec)²⁰.

Case I. On June 9th, 1897, Dr. T., aet. 61 yrs., a local physician in active practice, presented himself for examination and treatment. He gave the following history: In May, 1886, he contracted a severe cold which was followed by greatly diminished audition, pain, and a sensation of "plugging" in both ears. There was no tinnitus. Prior to this time the hearing had been unusually acute, although for thirty years he had suffered from nasal and nasopharyngeal catarrh. For the relief of the "plugging" he used the galvanic current, anode in right, cathode in left auditory canal. A moderate current promptly relieved the right ear, but produced a sensation of tension in the left, followed by a snap such as follows the breaking of a tense violin string. The pre-existing symptoms in this ear were now found to have been supplanted by a profound tinnitus of the marine-shell type. Other auditory phenomena also became manifest, one consisting of a marked difference between the two ears with regard to *tone-perception*, all ordinary tones being perceived by the left ear from three to five commas (of Pythagoras) lower in pitch than by the right; the other being a *dysakousma*, or *dysaesthesia acustica*, a condition causing great pain and distress for all musical sounds. Subsequently audition in this ear became progressively and profoundly impaired, with gradual increase of a tinnitus which was relieved by the recumbent position and entirely disappeared during occlusion of the left auditory canal. The left M. T. was found lustreless and retracted, with sufficient loss of transparency to conceal intra-tympanic details. A slight prominence of the processus brevis, with fore-shortening and sharpened linear marking of the manubrium, indicated rotation in the direction of its long axis. Functional examination of the *right* ear gave a positive Rinne, with slight loss of bone-conduction for the C₀ fork (32 d. v. s.) In the *left* ear forks C₀ and C⁴ gave negative Rinne; C² and C³ gave positive Rinne with greatly lowered Ac; and for C

and C¹, Ac was found to equal Bc. In both ears the lower tone-limit was raised, showing diminished (senile) Bc. The upper tone-limit was found lowered in both ears but more in the left. The C and C_o forks gave a positive Weber. A loud-ticking watch was heard at 2" and a residual whisper at one foot. In a comparison between the two ears it was found that for forks C_o, C, and C¹ the tone, both by Ac and Bc, was perceived *lower* in the *left* ear by five, five, and three commas respectively, while C², C³ and C⁴ were heard two, five, and two commas higher, respectively, in the same ear.

Treatment with Iodine and menthol vapor during Eustachian catheterization, together with applications of a weak solution of silver nitrate, was followed by only slight relief from the tinnitus and no improvement whatever in hearing. On January 14th, 1898, further impairment was noticed, this, however, promptly responding to treatment. At this time the pitch-relation was identical with that of June, 1897. The use of the pneumatic otoscope was advised and the silver application continued. An examination of January 22, 1898, gave a positive Rinne throughout the series, and subsequent examinations showed a gradual approach to the normal relation between air and bone-conduction. During this time the pitch-relation had also undergone a change for the better, C being now (May 10th) perceived only three commas lower by the left ear, while C³ and C⁴ were each perceived normally by the two ears. Throughout the treatment it was found that the only relief obtained from the constant tinnitus, which was the most annoying symptom, the dysakousma having become less marked, was by forcibly restoring the M. T. with the Siegel otoscope. A very considerable suction was necessary to accomplish this, but on no occasion was it attended with pain. Catheterization gave negative results, and, in fact, rather augmented the symptoms.

Case II. The writer's case, as found by frequently repeated examinations of his hearing, differs but little from the foregoing case with regard to the *Pseudokousma*. It differs, however, in its etiology and the physical characters observed, as well as in the treatment employed to secure relief. The existence of somewhat hypertrophied turbinates, together with slightly obtunded audition of, and an occasional tinnitus of varying intensity and quality in, the left ear for the past ten months, indicates the existence of Eustachian and middle-ear lesions and uricacidaemia. The last mentioned would seem to be partly responsible for the tinnitus, and no doubt shares in the causation of the other disabilities, since

under more favorable conditions—absence of severe mental strain, and proper physical exercise—the writer is exempt from all annoyance. The false-hearing has now been noticed for about seven months. During this time there has been a positive Weber, a negative Rinne existing in the left ear for only the lowest fork. A test on May 3d showed this changed to a positive. The tone-limits are and have been apparently normal. Repeated experiments show no difference in tone-perception as between air and bone-conduction. The writer has, however, been able to demonstrate that, in comparing the bone-conduction of the two sides in cases of false-hearing, it is essential that the stem of the fork should be placed on identical sites, since he has found that a difference of two or more commas may be determined by placing the stem on different regions of the mastoid, not only of the opposite side *but also of the same side.*

The following experiments will illustrate this point, first, as to the pitch-relation between the two ears as determined by bone-conduction, and, secondly, the difference in pitch for different regions of the same mastoid process, the writer performing the experiments on himself.

Experiment No. I.:

When the fork C (126 v. s.) is struck and the stem placed first on the *upper* part of the mastoid of the *right* side, and then on the *same* region of left side, the tone is perceived more than two commas *higher* in pitch on the left side. When this is repeated, using the *lower* portion of each mastoid on which to place the stem, the same relative difference in pitch is obtained. These conditions were found to be independent of the presence of overtones.

Experiment No. II.:

(a) When the fork C is struck strongly and placed first on the lower part of the mastoid and immediately transferred to the *upper* part, the tone is perceived about *one comma higher* in pitch in the *posterior-superior*, and *two commas higher* in the *anterior-superior* part, being more distinct and accentuated *directly over the mastoid antrum.*

(b) These conditions are exactly reversed when the stem is first placed on the *upper* part and then transferred to the *lower* part. In the first part of experiment No. II. (a) the loss of overtones does not appear to affect the pitch-relation; but in part b the tone now being higher in pitch, there comes during the subsidence of the overtones a *blurred* tone-image, i. e., a discord, which

gradually becomes less pronounced until, a pure tone being now perceived, the fork is again heard higher in pitch on the upper segment.

Fork C ¹	Experiment No. I	Same as with fork C.
	Right	" " "
(a)	Left	" " "
	Experiment No. II.	
	Right	
(b)	Left	No change in pitch.
Fork C ²	Experiment No. I	{ For both upper and lower seg- ments the tone is heard nearly four commas lower in left.
	(a)	
	Experiment No. II.	No change in pitch.
(b)		
Forks C ² and C ⁴	Experiment No. I	Both sides alike.
	Experiment No. II.	No change in pitch.
	Experiment No. I	Higher on right side.
Fork C		
	(a)	
	Experiment No. II.	Same as with fork C.
	(b)	

In case No. I., (Dr. T—), Exp. No. II. showed no change for any fork except C and this for the left mastoid only, where it was found that the *lower* part perceived the tone *five* commas higher than the upper part. It may be noted here that between the several experiments an interval, sufficiently long to prevent *tone-fatigue*, was allowed to elapse. Care was also taken to prevent confusion between tones and over-tones. In case II. (the writer's) it is important to discuss the symptomatology at somewhat greater length than in the brief outline already presented.

During the progress of the disease, which probably began prior to May, 1892, when the removal of an impacted ceruminous mass relieved a sudden deafness of the left ear, no pronounced departure from normal hearing has been observed in this ear, except on the few occasions (3) when it was found necessary to remove some cerumen, on the last occasion, June, 1896, the mass containing distinct (macroscopic) evidence of the presence of aspergillus spores.

In addition to the foregoing, the writer has been conscious during the last two years of a more or less constant sensation of weight and fullness of the left mastoid region, sometimes amounting to a feeling of what might be termed *intra-mastoidal* pressure, while, at not infrequent intervals, extreme tenderness has been noticed over the region supplied by the posterior-auricular branch of the facial nerve, this tenderness being coincident with the sense of fullness in the mastoid. These conditions, associated with the tinnitus

and a recently discovered, slightly obtuned audition, and still more recently a condition of false-hearing, determined the writer to investigate the case for himself. Inflation (using the Dench apparatus with the vapor menthol, camphor and iodine) showed the left Eustachian tube only slightly less patent than the right, and not only failed to produce any perceptible increase in hearing-power but was followed by an increase of the tinnitus. Local treatment (self-directed) for the relief of the recurring intra-nasal disease, together with the application of astringents to the ostium tubæ, proved unsatisfactory. Momentary relief from the tinnitus—the most annoying symptom—could be obtained at any time by means of direct pressure against the manubrium with a cotton-tipped probe, but to obtain any considerable respite it was found necessary to entirely occlude the meatus for some time.

It is not unimportant to state that, in the daytime, the subjective sounds became noticeable only after some exacting piece of work, the symptoms being commonly more pronounced during the evening when outside noises had ceased.

The foregoing enumerated tests were applied to the mastoids at various times, both immediately preceding and succeeding the production of the cessation of the subjective noises by direct pressure or by occlusion, with the result that *no relation between the tinnitus and the false-hearing could be demonstrated*. Owing to the evident catarrhal condition of the tympanic cavity, the mastoid antrum, and the mastoid cells, treatment with the camphor-menthol-iodine vapor was persisted in, regardless of other conditions, with the result that very recently *the false-hearing was found to have entirely disappeared*. Although the tinnitus is still more or less in evidence it is much modified, while the hearing power has become practically normal. The writer is confident of still better results under proper dietetic and physical conditions. It is certain that a very considerable amelioration of symptoms followed sundry operations during the past few years by N Y. surgeons of great eminence, but they were undertaken under circumstances which precluded the necessary attention to the proper systemic treatment which should have followed. These operations were directed towards the relief of intra-nasal occlusion and pressure-pain, a pain which resembled that of an acute catarrhal ethmoiditis and which once or twice produced symptoms exactly like those of hay-fever. As a result, the intra-nasal condition was found to have been relieved, the lateral occipital tenderness to have disappeared, and, after the last operation, the tinnitus was found considerably diminished. When the distribution

and anastomoses of the branches of the 5th, 7th and 9th cranial nerves are considered, it is not difficult to determine the direct or reflex effect of mechanical or toxic irritation of any of their branches and the symptoms or lesions to which it may give rise? The effect of such irritation is also seen in the *reflex oscillation of the membrana tympani*, the abolition of which, together with relief from the tinnitus, has frequently been brought in the manner already described.

Although the *uric acid* factor in the causation of lesions of the nose, throat, and ear has been disclaimed and utterly abandoned by certain rhinologists and neurologists of note, it may yet appear that their antagonism is based on the results of a plan of *local* treatment, operative or otherwise, in which an *associated* plan of treatment directed towards the elimination of toxic matter was conspicuously absent. If their conclusions were the result of their observation of any number of cases in which the necessary therapeutic, dietetic and hygienic measures were not rigidly enforced, their disappointment was inevitable.

The writer's experience affords abundant proof of the necessity of such a *morale* while conducting the treatment of even the simplest cases. In his own case the catarrhal swelling of the mucosa of the mastoid region and the adjacent mucous tissues, resulting in an altered function of the sound-conducting apparatus, was undoubtedly due, primarily, to imperfect elimination of various toxic substances, not the least important of which was uric acid. "Taking colds," etc.—? It is now pertinent to show the particular manner in which a departure from the normal physiological conditions above mentioned has been made manifest in the two cases under consideration.

In Case I. we have evidently a traumatic lesion resulting from the unwise use of an unmeasured galvanic current which, though described as *moderate*, was probably excessive. Prior to the "taking cold" there has been no conscious disability in this *left* ear—the ear so important to the violin-player; but suddenly, during the application of the electrical current, a *snap* is heard, described as being similar in quality and loudness to that of the "snapping of a tense violin string." *Immediately* there is a great "jangle" of sounds, but later this becomes modified and settles down to a constant tinnitus and a condition of false-hearing in the ear affected. There can be no doubt as to the *cause* of this profound disturbance of the labyrinthine contents. The clinical history of the case presents positive evidence of the partial or complete suspension of the force

required to regulate the impact against the m. obturatoria. In other words, *the integrity of the stapedius muscle was impaired, or lost, when the snap occurred.* This is abundantly proven by the results of treatment directed toward the re-establishment of the normal plane of the membrana tympani. It has been shown that the inflation of the tympanic cavity gave negative results, even augmenting the symptoms if any considerable pressure was used; while, on the contrary, the aspirating otoscope gave immediate relief from annoying subjective symptoms. The absence of intra-tympanic adhesions and spasm of the t. tympani muscle having been demonstrated by the results of catheterization, it was manifestly impossible that an augmentation of the subjective symptoms could have been due to any other cause than the absence of the *stapedian curb*, thus permitting an exaggerated pressure from without inwards, and a condensation of the intra-tympanic air, resulting in a profound disturbance of the labyrinthine elements.

It is interesting to note that in the majority of the very few recorded cases of pseudokousma, whether existing alone or associated with a diplacusis, it has been found that a difference in tone-perception has existed only for aerial-conduction, the same pitch being found with bone-conduction on both sides. *Gruber* reports a case of *Blau* of suppurative middle-ear disease of the *right* side, where the tone of a tuning-fork was heard from one-quarter to one-half a tone *lower* by the *right* than by the *left* ear, while with bone-conduction they seemed to be of the same pitch on both sides. Some time after the perforation healed, a normal perception of pitch returned. An exception is found in *Burnett's* case, the difference obtaining only when the fork was applied to the *mastoid*.

Bishop records a case (probably non-suppurative) where "certain tones were incorrectly heard by one ear (both ears being similarly diseased) all tones being correctly heard by bone-conduction." While the writer is under the impression that false-hearing is impossible *for one ear only* when both ears are *similarly* diseased, it is evident that the condition obtaining in these two cases must be considered as involving only the structures of the middle-ear proper, the mastoids being probably normal. On the other hand, where a comparison between the two mastoids reveals a marked difference in the perception of tone, this difference corresponding exactly to that perceived by aerial-conduction, the only rational conclusion to be drawn is that the lesion responsible for the altered character of the transmitted sound is located not only in the struc-

tures of the tympanic cavity, but also in the mastoid, whose osseous conductivity or resonating function has become impaired during, or subsequent to the establishment of a pathological process within the middle ear.

199 Main St.

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**Adenoid Vegetations—Albuminuria—CARRIÉRE—Rev. Heb.
Laryng. d'Otol. et de Rhinol.**, Sept. 24, 1904.

The author quotes a case of a child suffering from albuminuria, for which no cause could be assigned, and in which the abnormal elements disappeared from the urine after the removal of a very large adenoid vegetation. In explanation of this successful result, Dr. Carrière believes that intense microbial infection is frequently due to adenoid vegetation. The microbes which live in the anfractuosities of the hypertrophied pharyngeal tonsil may pass into the circulation and infect the whole system and irritate the kidneys. It is a well known fact that microbes create a large quantity of tocsin, which being absorbed, is eliminated by the kidneys, and many thus affect this organ.

SCHEPPEGRELL.

ACUTE MASTOIDITIS, SEPTIC INFECTION OF THE SIGMOID SINUS, PHLEBITIS OF THE INTERNAL JUGULAR, IN A CHILD: RECOVERY WITHOUT OPERATION.

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Cases of septic infection of the sigmoid sinus and internal jugular which recover without the aid of surgical intervention are rare. On the other hand, septic infection of the lungs arising by reason of septic inflammation advancing successively by way of the following structures; namely, pharynx, Eustachian tube, tympanic cavity, mastoid antrum and cells, sigmoid sinus and internal jugular vein, will be occasionally overlooked except as to the ultimate state of the lungs for several reasons; not least important of which is the frequent impossibility of obtaining a clear history of the case covering the time preceding that at which the patient comes under observation.

The later symptom caused by the presence of a thrombus, the result of septic inflammation in the internal jugular, namely, the hard cord-like mass along the anterior border of the sterno-mastoid muscle is usually not present until a comparatively late stage of the disease. Instead, there are an initial chill and accompanying sharp rise of temperature which marks the inception of the infection, attended with exquisite tenderness along the course of the vessel, together with the mastoid and tympanic symptoms and perhaps a history of the preceding throat disorder. These latter may be submerged for the time in the gravity of the new symptoms; the track of the infection may then be unappreciated and the supervening pneumonia may be regarded as of the ordinary type.

Cases like the following, in which the inflammation in the vessel subsides without the formation of an extensive thrombus, and the occurrence of pneumonia follows as a prompt sequence of the phlebitis, are necessarily difficult to identify unless under the observation of the surgeon from the time of the genesis of the earlier symptoms.

A girl of 10 years, of previously exceptional health and good family history, became ill during an epidemic of influenza, with fever, spotted throat, furred tongue and other systemic symptoms. She progressed favorably until the fifth day when she was seized with a sharp pain in the right ear, with pronounced mastoid pain and tenderness. Pain in the ear and mastoid region persisting, the next day the

bulging tympanic membrane was freely incised and a copious discharge of blood-stained serum established. After this, there was again progressive improvement until the ninth day, though tenderness of the mastoid still persisted. On this date she had a sharp chill, temperature of 105° F., increased pain over the mastoid, the course of the internal jugular in the neck became painful and intensely sensitive to touch. The following day the child had less mastoid tenderness, the jugular same as before, no retraction of the head, face anxious, eyes sensitive to light and reacting to accommodation. A small perforation existed in the upper part of the drum membrane, otherwise it was pale and macerated. Operation on the mastoid was now proposed and preparation made accordingly for the afternoon of the same day. Before this was accomplished a short, hacking cough developed with pain in the right side. She was drowsy, eyes still suffered from the light. Temperature 103.6; respiration 32. Her physician diagnosed a localized pneumonia. A thick dressing of ichthyl ointment protected by gauze was applied to the course of the jugular. Operation was temporarily abandoned. To the surprise of the writer a rather prompt recovery from the chest mischief, the phlebitis and the mastoiditis ensued.

No such happy precedent as an outcome of so grave complications is given by MacEwen in his classical chapter on Thrombosis of the Sigmoid Sinus, (*Pyogenic Infective Diseases of the Brain and Spinal Cord*, Glasgow, 1893), nor do special works on diseases of the ear refer specifically to these cases. It is therefore deemed worthy of report since so transient a form of phlebitis is probably rare. Every other case of lateral sinus infection which has occurred in my practice has been operated upon.

Infection undoubtedly occurred in this case through imperfectly closed spaces in the bone, from the infected mastoid cells, to the lateral sinus; but the amount of the infection was small or else lacking in virulence and spent itself without the usual occurrence of other pus foci than those described.

SOME OBSERVATIONS ON THE SURGERY OF OTITIC BRAIN ABSCESS.*

BY JOHN F. BARNHILL, M.D., INDIANAPOLIS, IND.

Twelve years have elapsed since MacEwen published his classical work on the surgical diseases of the brain and spinal cord. It is strange that this author has remained silent as to his subsequent experience. It is equally strange that so interesting and practical a subject has not been taken up by some one else at the period of abandonment by the brilliant Edinburgh observer, and dealt with as exhaustively as the array of accumulated facts concerning this branch of surgery would seem to justify. Instead of such a publication of individual experience, or of even an adequate compilation of the world's progress in intra-cranial surgery, there has appeared during this time but little more than such information as is contained in the case reports of individual operators, each valuable in a way, but of itself giving so little detail either as to pathology, diagnosis or treatment as to form an unsatisfactory guide to the surgeon who proposes to do this class of work.

Several works on otology omit mention of otitic brain complications; others treat the subject too briefly to be of any service, and Dench, whose work as a whole is the most commendable text-book in our language, deals with the matter too briefly to become a good diagnostic or operative guide.

In view of the fact that the mastoid surgeon may at any time encounter a brain complication, and that he must then deal with it radically and without delay, it is highly important that the most perfect technic pertaining to the steps of operating, and the most approved methods of after-treatment, shall be available for his guidance. Unfortunately, such information is at present neither as available nor as well established as is desirable; and therefore in operations for brain abscess, the aural surgeon is almost certain in any case to encounter conditions concerning the surgical dealing with which he will have neither an established guide or even precedent, and hence will be forced under hurried and often trying circumstances, to decide upon a plan independent of rules, based wholly upon conditions presenting at the time, upon general surgical principles, and upon his own unaided judgment.

* Read at the meeting of the Western Section of the American Laryngological, Rhinological and Otological Society, St. Louis, February 22, 1905.

It is not expected that the brief presentation of the subject as given here will greatly help to fill the gap that seems to exist in the surgical aspect of otitic brain complications; but it is earnestly hoped that the discussion it may evoke will materially aid the future operator, whose duty it will be to deal most wisely with intra-cranial invasions from the septic ear.

My limited experience in this class of surgery leads me to the very positive opinion that thoroughness in dealing with every step of the operation is most essential to the successful outcome of any case. Of course there should be a reasonable limit both to the extent of the incisions through the soft tissues, and to the area of dural surface that is uncovered. Careful consideration of such detail should be given to the extent of not seriously hindering the operation by making the incision so small as to compel the surgeon to work through a cramped exposure on the one hand, or on the other, of not cutting more broadly than is actually necessary to secure good inspection of the diseased parts, and to afford an opportunity to manipulate the deeper tissues, unhindered by the smallness of the openings.

MacEwen's method of clearing out all the diseased mastoid tissues and of removing both the tegmen tympani and antri, in combination with a trephine opening through the squamous plate of the temporal immediately above the external auditory meatus, must stand as good surgical procedure in most instances today; but there are undoubtedly cases in which this amount of dural exposure is not sufficient, and I am convinced that I lost one of my cases by strict adherence to such limited uncovering of the abscess site. A cramped exposure may be sufficient, if it happens to be made directly over the abscess, but if the bulk of the abscess cavity lies in any direction away from the center of the small primary opening, it is best to remove the bone with a rongeur over the dura sufficiently to give the greatest advantage of manipulation in the after dressing of the wound, as well as to secure the thorough evacuation of the pus at the time of the operation. In the cases of chronic temporo-sphenoidal abscess I have seen, it has seemed wisest to secure the permanent drainage through the combined area of the tegmen antri and tympani. Drainage at this point is practically from the bottom of the abscess, and since the semi-reclining position of the patient should early be assumed, no other site so efficiently favors the discharge; then there is but little muscular tissue surrounding the external wound at this point to become hypertrophied, granulate and otherwise hinder the efficient after dressing. The immediate proximity of the infected mastoid wound, and the consequent liability of further intra-cranial

infection from this source, is of course an objection to this site as a choice for drainage purposes. However, if care is taken when dressing the wound to first cleanse and pack the mastoid opening thoroughly and separately before removing the dressing from the cerebral abscess, such objection can be largely overcome, and the advantages arising from the cranial opening in this location are so great as to entirely outweigh them.

After the dura is exposed, extra dural pus may be found, but the management of this condition seems sufficiently clear. If the abscess is intra-dural, and the history of the case has been sufficiently positive to justify further operation, exploration of the intra-cerebral tissues becomes a most important step, and it seems to me much more additional light is needed as to the extent to which such exploration may be carried. To what extent is an operator justified in making exploratory brain punctures or incisions in his efforts to locate an abscess? Operators who have written most concerning the matter have advised the use of the hollow needle, trocar and canula, and bistoury, as proper instruments for brain exploration. When pus is located MacEwen advocates the employment of a slender forceps to divulse the cerebral wound. Dench urges the use of the little finger for the purpose, while Whiting argues the benefits arising from the employment of the encephaloscope which he has invented, and which gives direct illumination of the interior of the abscess. The exploratory incisions made for the purpose of discovering and evacuating the abscess are advised to be made downward, inward and forward; upward and forward; inward; inward backward and downward. There is a possibility in any case of temporo-sphenoidal abscess that none of the above explorations may penetrate and evacuate the collection if the same be small and deeply seated. The very practical question then arises as to whether or not the operator is justified in going further in his exploratory efforts in a given case. While the previous history, the facts determined at previous examination, and the present condition of the patient must to a considerable extent determine the justification for more extensive exploration, yet there ought to be established, if possible, reasonable limitations to which carefully trained operators may be justified in exploring the tissues without incurring too great a danger to the life of the patient. It must of course be clear that a considerable number of incisions into the brain substance, made in close proximity to each other, may break down or impair the nutrition of the parts to such an extent as to cause sloughing, or may give rise to another condition which will prove equally serious, namely, the extrusion of a

portion of the intra-cranial structures in the form of a cerebral hernia. The surgeon may therefore, because of conscientious fear of these serious consequences from over-operating, fail to explore the parts thoroughly, and will therefore fail to evacuate an abscess that is present; or he may on the other hand, be induced to over-explore the brain in his efforts to find a non-existent collection, because the previous history of the case had so certainly indicated the presence of an abscess, that he would not consider that his full duty had been performed to his patient until pus had been sought for deeply and in every direction.

The following two cases illustrate the above statement: G. W., 15, a mute, and a student at the Indiana School for the Deaf, had measles February, 1904, with suppuration of right middle ear, and mastoid involvement. Intense pain over the right temporal and about the external orbital process developed and persisted; frequent vomiting occurred, sub-normal temperature was recorded, and the pulse averaged 60 per minute with a minimum of 45. These symptoms taken in connection with the reflexes present, and the rapid decline in the strength and appearance of the boy, were sufficient in the opinion of Dr. C. S. Goar, physician to the institution, and Dr. Wm. Chas. White and myself, consultants, to justify the diagnosis of a brain abscess. Operation was therefore advised and the patient taken to the hospital, where after due preparation the mastoid was rapidly ablated and the antrum opened. Both cells and antrum were filled with pus. The skin incision was extended above and around the pinna for an inch toward the external auditory meatus. The dura appeared ashen in color and slightly thickened, but no extra-dural pus. The previous symptoms pointed so clearly to abscess that it was confidently expected one would be entered at the first puncture. The dura was therefore opened and a slender knife inserted inward, forward and downward without result. This incision was rapidly followed by the others recommended by Dench, but all without effect. Lack of established knowledge as to the extent the surgeon may be justified in going in such cases deterred my further efforts. The dura was therefore partly replaced and sutured, but the external wound was kept open with a gauze packing extending to the dura. Following this operation the pain was greatly relieved owing no doubt to the mastoid drainage. Pulse and temperature both remained sub-normal. During the dressing of the wound four days later, I was tempted to gently probe the brain, and in following up the tracts I had previously explored was rewarded by a very considerable flow of pus, estimated at from one and a half to two ounces. A rubber drainage tube was then inserted for two days and the after-treat-

ment carried on in the usual way. A moderate sized cerebral hernia shortly occurred, which together with excessive granulation and hypertrophy of the temporal muscle very greatly hindered efficient dressing, endangered the successful outcome, and greatly prolonged the recovery. The hernia was cut away, the granulations cauterized and the hypertrophy finally subsided, the patient returning home in six weeks apparently well. Now after one year he is in school, strong and with mentality unimpaired.

Failure to find the abscess in this case caused me to give the matter much thought, with the result that I censured myself for not being bolder under circumstances in which the patient's life was in imminent danger, and in which pus seemed so certainly present, even though surgical precedent gave no warrant for such action.

Accordingly when C. K., age 6, was brought some months later with a diagnosis of brain abscess by the family physician, and when after the case had been under observation for several days, and after careful study of the record, after repeated examination and consultation, this diagnosis was confirmed, and operation determined upon, resolution was made, if necessary, to be more persistent in the exploratory efforts.

The steps of the operation were exactly as in the former case with the exception that, on account of its being a chronic case, the radical mastoid operation was performed, and the dura freely exposed over both tegmen antri and tympani. The dura was much injected, almost livid, and bled quite freely when incised. A large quantity of cerebro-spinal fluid poured through the opening. Incisions into the brain tissue were made in number and direction as in the previous case, and each incision was somewhat divulsed according to MacEwen's directions, all without discovering pus. The history, chart and localizing symptoms in this case seemed clearly indicative of abscess both to Dr. White and myself; and these, taken in connection with the experience in missing the former abscess because of timidity, induced me to continue the exploratory punctures, and consequently an incision was made between each former one, but unsuccessfully. The dural wound was not entirely closed owing to the very considerable serous outflow. The dressing consisted of gauze loosely packed extra-durally; the skin flap was left partly unsutured. The former hemicrania, which had been most unbearable, disappeared entirely, and the child seemed quite comfortable on the following day. The first dressing was allowed to remain five days, and the wound appeared to be doing splendidly at this time. At the third dressing, however, a small cerebral hernia was present which increased to the size of a half English walnut, inflamed, granulated, bled easily

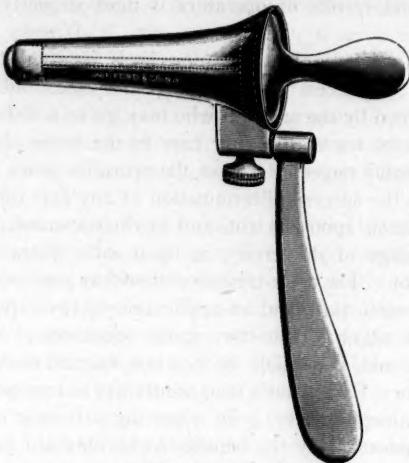
and, as I believe, complicated the case most unfavorably. At the same time there was an elevation of temperature and the beginning of stupor, all of which symptoms continued to increase up to the time of death, a little more than three weeks subsequent to the operation. Meanwhile the wound was several times explored through the former incisions by means of a sinus probe, but there never was any evidence of suppuration. No post mortem was obtained, and if an abscess was present, explorations beyond the established limit failed to find it.

Clearly then the subject of intra-cerebral and intra-cerebellar exploratory incisions are of vital importance to the aural surgeon, whose work is leading him brainward more and more; and the collective experience and results of operators is most urgently desired concerning it.

In general surgery, the operation itself is often the one great essential of the successful outcome of the case, and good results may be obtained by the surgeon who may go to a distance to do the work though he leaves the after care to the home physician. But this will probably never be true of the operative work under discussion, because the successful termination of any case of brain abscess depends as much upon efficient, and in chronic cases upon the continuous drainage of the cavity, as upon early diagnosis and thorough operation. The after-treatment therefore requires the continuance of that same skill, and an application of the experience of the same surgeon who has done the original operation. For this reason, the patient should, if possible, be in a hospital and conveniently near to the operator. Patients at a distance should be transported, because the risk of a long journey, even when the patient is critically ill is entirely compensated by the benefits to be obtained from the daily examination and after treatment of the operating surgeon, who alone knows best the entire nature of the delicate brain wound which he has made, which must be drained uninterruptedly and healed with the least possible harm to surrounding healthy tissues. Many cases of brain abscess have been reported in which early diagnoses were successfully made, and upon which operations were performed which were surgical triumphs in so far as relieving the present condition was concerned, but in which from lack of ability to secure perfect drainage, secondary abscess or other complication arose, and the patient finally died. I lost one such case several months after the original operation, after the patient had returned to his home, and after there had been every reason to believe that he was entirely well. The success in this case had been so great an inspiration that the re-infection, subsequent abscess and death was of course the greater

shock. A post mortem examination proved to be the greatest lesson taught by all those several months of strenuous effort to save the patient's life. (The specimen is exhibited.)

After opening the abscess, MacEwen advises that the cavity may be gently syringed in order to further secure the complete evacuation of its contents and its better sterilization. Whiting and Dench believe this practice a bad one in that even with the most gentle syringing, and where ample provision is made for the return of the fluid, there is danger of washing away healthy brain tissue, and of carrying infective material into new and dangerous quarters. Dench therefore advises packing the abscess with gauze and seems not to differ, in this respect, in his method of dealing with acute and chronic



Whiting's Encephaloscope.

abscess. Whiting uses his encephaloscope which he warmly recommends, and with which he states that he is enabled to see into and thoroughly inspect the abscess cavity and thus judge whether it is acute or chronic. This information becomes of the first importance in the method of after-treatment and drainage, and although I have never used the instrument, I believe it is valuable for both diagnostic and treatment purposes, and therefore become an invaluable aid in the treatment of one of the most delicate and dangerous of all surgical ailments. The acute cases of abscess I have seen and treated lead me to fully agree with Whiting that there was no structural sack retaining the pus collection, for in one case the disease which caused the abscess had not lasted over ten days, and the other only three weeks. In acute cases, Whiting saw through the encephaloscope

only "pinkish walls with here and there shreds of plastic lymph." Such being the pathological fact in the acute cases, only the most delicate manipulations within the same are permissible. MacEwen's percentage of cures following his method of washing the cavity after evacuating its contents, had led me to adopt the plan of gentle syringing; and yet I always feel the greatest timidity concerning its employment. It would, however, seem difficult to recognize a greater danger arising from this plan of careful cleansing, especially when provision for a free escape of the infected fluid has been provided, than would be inflicted upon the unprotected brain substance by the insertion of the little finger, or by the most deft introduction of an instrument like the encephaloscope. This step of the treatment is by any method a most delicate one, and the surgeon's best judgment and most gentle handling are imperative, whichever one he may choose to apply. The one or the other method may be equally successfully used provided the greatest gentleness governs its employment. If the acute abscess cavity is large and gaping after evacuation, no objection could be raised to through and through drainage by means of the rubber tube, entering the cavity through the tegmen tympani and antri. My only two acute cases were so managed and both recovered. The best opinion seems at present to favor the insertion into the cavity of the acute abscess the smallest wick of gauze that will serve as a drain, and that acute abscess cavities should never be so tightly packed with this material as to distend them. Daily dressing should be the rule, although MacEwen indicates that the first may sometimes be left on for as long as three weeks, and that upon its removal the wound is found to be satisfactory healed. No approach to such fortunate circumstance occurred in either of my acute cases, and daily dressing seemed most imperative.

The chronic abscess being well encapsulated, and therefore walled off from the surrounding brain substance, must be managed very differently in the after-treatment. Once evacuated the cavity refills, often within a surprisingly short time. This results from the changes taking place in the limiting granular membrane, and has its pathologic analogy in chronic abscess elsewhere. These granulations may be healthy, and when such is the case the abscess cavity will close satisfactorily if only free exit for the pus is provided and maintained. However, a too vigorous granulation may occur, and the surface of the limiting membrane at some point may be covered with necrotic polypi so as to greatly weaken the membrane, render it liable to leakage, and thus lead to secondary abscess, rupture into a ventricle or other damage of a serious or fatal nature. The limiting membrane may also be wrinkled, and septa sometimes divide it into pockets,

thus adding greatly to the difficulty of thoroughly cleansing and disinfecting every part. The mere maintenance of an opening large enough to permit free exit of the pus is therefore not sufficient in the majority of chronic cases. The method of packing with sterile or medicated gauze into all the irregularities, and of changing the same as often as the material becomes well saturated, has its advocates; and if the cavity is large, the case of long standing, and therefore the limiting membrane quite firm, it is beyond question the most rational and successful measure.

If this method of gauze packing is determined upon, the insertion of the gauze strip should be made after a carefully considered plan. To avoid wadding of the material, the most distant portion of the cavity is first filled, and over this the coils are loosely inserted in such a way as to absorb and dry the entire area of the disease. Careless, rude or unskilled management of these drainage strips may, and no doubt would defeat the purposes for which they are intended and therefore the final outcome is greatly determined by the skill with which they are introduced. The strips should usually be not over three-fourths inch wide, cut straight, free from ravelings, and drawn directly from the freshly sterilized package at the moment of their use.

Both in the beginning and throughout the management of the chronic brain abscess, the encephaloscope should be found most useful. The limiting capsule is here usually so strongly built up that the cavity collapses but little or not at all after evacuation of the pus, and insertion of the instrument can therefore be accomplished without the slightest injury to brain substance. By means of this instrument and a Kirsstein lamp, every part of the cavity can be inspected, and therefore accurate information can be gained upon which to determine the line of after-treatment. Thus if the limiting walls are firm, gentle syringing will be a proper means of completely evacuating and disinfecting the cavity; or a cotton mop may be used to dislodge inspissated pus; or a curette could be gently and deftly employed for the same purpose, under direct illumination of course, and with the operator seeing exactly what he does. It is in the efficient packing, however, that this instrument should have its greater use, for through it the bottom of the cavity can be seen, and into it the gauze placed as above directed. The instrument also acts as a protection to the wounded edges of the opening through the capsule, and in this manner prevents the inevitable contusion that would otherwise arise from even the most gentle insertion and withdrawal of the gauze. The pain resulting to the patient from this same source would thus likewise be avoided.

THE PASSING OF THE GALVANO-CAUTERY IN THE TREATMENT OF DISEASES OF THE NOSE.*

BY WILLIS S. ANDERSON, M.D., DETROIT, MICH.

The galvano-cautery has been used so extensively for many years in the treatment of nasal diseases that it may seem like heresy to question its value as a routine measure. While admitting its place as a remedial agent in nasal disease, I believe it has been used too extensively and that we have at our command other measures, which offer more satisfactory results than the crude method of cauterization.

The cautery in the hands of the unskilled does positive harm. It is no uncommon experience to find adhesions uniting the two nasal walls which vary from a slight bridge of tissue to almost complete occlusion of the nose. These results occur in the hands of the experienced as well as inexperienced operators. Scars, cicatrices and unwarranted destruction of mucous membrane often result. The writer heard a practitioner remark that he had cauterized a patient's nose eight or ten times without giving relief to the nasal obstruction. The repeated use of the cautery is never indicated in nasal obstruction, and can only do harm. The mucous membrane ought not to be sacrificed unnecessarily. Any measure which is followed by scar tissue in place of healthy mucous membrane leads later to a train of disagreeable symptoms which may be nearly or quite as annoying as the original affection. The formation of crusts, or scabs over the site cauterized often causes constant annoyance for months, and may persist the remainder of the patient's life.

Cauterization, at the best, destroys the mucous membrane with its secreting surface. It is difficult to limit the effect of the cautery. It is a recognized fact that cauterization of the middle turbinate is followed by more reaction than when used on the inferior turbinate.

In the early years of my experience, when I used the cautery more than now, I noticed severe reactions in certain cases, when it was applied to the middle turbinate. In other cases there was no special reaction. I was at loss at times to account for this phenomenon. It did not seem to be due to any peculiarity that I could recognize before operating. The explanation is simple in the light of our present knowledge of the peculiar anatomic and pathologic conditions which may affect the middle turbinate. When the middle turbi-

* Read at the meeting of the Middle Section of The American Laryngological, Rhinological and Otological Society, Toledo, Ohio, February 24, 1905.

nate has the usual anatomic form and the adjoining ethmoid cells are free from infectious secretions, then the cautery carefully applied will not usually produce any special reaction.

In cases formerly thought to be suitable for the cautery these conditions did not always exist. We know that in a certain proportion of these cases—nine per cent according to Lathrop, (*Inferior Ethmoidal Turbinate Bone*, Howard A. Lathrop, *Ann. of Otol., Rhinol. and Laryngol.*, September, 1904) the middle turbinate contains normally one, or more cells. If these cells are infected at the time of cauterization, marked reaction and septic symptoms may develop and even lead to a fatal meningitis. In a recent article by Packard (*LARYNGOSCOPE*, September, 1904), he has found reported in literature several deaths from meningitis which followed the use of the cautery in the nose. There seems to be greater danger from the use of the cautery over the middle turbinate than in other portions of the nose. It is difficult to limit the cauterizations to the area desired, and the slough which forms favors infection. The close relation existing between the nose and the cranial cavity is not generally appreciated. There is danger of infection through the vessels which communicate with the meninges at the base of the brain, and through those which anastomose with the orbital vessels.

In order to obtain the most perfect results with the minimum danger to our patients, we ought to aim for the best surgical technic, and give careful attention to details. After criticising the too frequent use of the cautery it is advisable to suggest some methods which may be used in its place.

First, let us study some of the conditions for which the cautery is frequently used. It is mainly used for correcting hypertrophy of the turbinated bodies; for severing adhesions, or false membranes; for cauterizing the base of a polyp, in the hopes of preventing its return; for the treatment of hypersensitive areas of the mucous membrane, to relieve reflex symptoms, or nasal neurosis; for the control of hemorrhage; and unfortunately, by a few, for the relief of cartilaginous or bony obstructions, in the vain hope that such solid tissue may be safely removed by the cautery.

Before discussing in detail the methods to be used in place of the cautery, a few general suggestions will be made. We ought to destroy as little of the mucous membrane as possible, that the secreting surface may be preserved and scar tissue avoided. We should limit our surgery to the part affected, and be careful to avoid injury to adjacent parts, that adhesion may not result. We should aim to choose the method that is least apt to be followed by a septic slough. It is

far more surgical to make a clean cut with a knife or scissors, remove the obstructing portion and cover the exposed surface with a flap of mucous membrane. The result obtained is nearer ideal than when the cruder method of cauterization is used. Surgical cleanliness should be observed, in the instruments used, as well as in the field of operation.

Let us consider first hypertrophy of the inferior turbinal body. The galvano-cautery is still used as the routine treatment for this condition. The object sought, by one or more lineal incisions with the cautery knife, is to destroy a certain amount of tissue and depend upon the resulting cicatrix to bind down the mucous membrane to the turbinated bone. This method is not adapted to those cases where the bone itself is hypertrophied, or deformed. In selected cases good results undoubtedly follow this method, but at a sacrifice of mucous membrane and with the result that dried mucous accumulates over the cicatrix. If the septum is touched adhesions often result.

Let us consider some of the methods that may be used to replace the cautery. In those cases where there is an engorgement, or intumescence of the turbinal, and where under cocaine the tissue shrinks to a marked degree, sub-mucous puncture is a simple and efficacious method.

The technic is as follows: The mucous membrane over the turbinal is cocainized by a pleget of cotton saturated with a four per cent solution of cocaine. It is better not to cocainize to such an extent that the mucous membrane is shrunken too tightly to the bone. A sharp cataract knife is inserted under the mucous membrane, parallel with its surface and close to the bone. The knife is inserted on an average of about one-half inch, the distance depending on the size of the turbinate. The sharp edge of the blade is then turned towards the bone, drawn along its surface, then turned outward and the end rotated in order to destroy a portion of the vascular sinuses. The knife is then withdrawn and a pleget of cotton saturated with adrenalin chloride solution is applied over the bleeding point. After all bleeding has ceased, the small opening in the mucous membrane made by the knife is sealed with collodion, or if preferred, the nose may be packed for twenty-four hours. We have by this method destroyed enough of the vascular tissue to cause cicatrical contraction with relief of the obstruction, without the sacrifice of any mucous membrane. No after treatment is necessary except possibly a cleansing spray. In a few weeks contraction will have taken place with complete relief, with no visible cicatrix and with a normal appearance of the turbinal. The sub-mucous introduction of the cautery knife is

advocated by some. This gives good results, but it is difficult to limit the amount of tissue destroyed, and I have seen sloughing of the greater portion of the turbinal follow. The cautery possesses no advantages over the knife and it has several disadvantages.

In true hypertrophy of the turbinate, when simple sub-mucous puncture is not sufficient, I have found the flap operation most satisfactory. After the application of adrenalin and cocaine, an incision is made along the lower edge of the hypertrophied tissue, then with the knife or sharp-pointed scissors, a flap is dissected up and a wedge-shaped piece, with the base of the wedge downward, is removed. The size of the wedge removed depends upon the amount of hypertrophy. If the bone is hypertrophied a small portion is removed with a saw. The flap is replaced and a suture inserted. Packing with a strip of lint, impregnated with subnitrate of bismuth, renders a suture unnecessary. If the suture is used, then the line of incision can be sealed with collodion. In a few days the flap has united, no visible scar remains, and no crusting or accumulation of dried mucus, results.

In hypertrophy of the middle turbinate, it is usually necessary to remove the anterior end. As this includes the bone, the cautery is never indicated, but rather the snare, the saw or the scissors are to be used. If the soft parts only are involved, then the snare is to be preferred, and can be used without the danger of infection attending the cautery.

The use of the cautery for severing adhesion, or false membranes, can be discarded and better results obtained by making flaps of tissue to cover the denuded surface, thus preventing the formation of synechia.

The cauterization of the base of polypi after their removal is a well recognized method, but in many instances the base of the growth can not be seen. We know that polypi frequently originate from the edge of the ostium maxillaries, or from the ethmoid cells. It is better surgery to use the curette in these cases, breaking down the walls of the ethmoid cells, if necessary in order to eradicate the origin of these growths.

The cautery has a place in the treatment of hypersensitive areas in the nose in certain neurosis of the nasal origin; but even here it is used largely in a tentative manner, without well defined indications.

If the cautery is to be used in these conditions, care must be exercised that only the hypersensitive areas are touched, and no other area. Where hypertrophy exists its removal, rather than cauterization, is indicated. There will remain a certain well defined, though

limited use for the cautery until such a time as we shall have a better understanding of these peculiar neurotic conditions.

The cautery is often used for arresting hemorrhage from the nose by touching the bleeding point. There is no doubt of its efficiency, but, by its use we often substitute one unfortunate condition for another. The slough formed by the cautery is apt to give rise to severe secondary hemorrhage when it comes away, and the ulcer remaining is an additional source of annoyance. If we have the conveniences at hand, it is better to apply adrenalin over the bleeding point until the hemorrhage is controlled, then pack the nose carefully with subnitrate of bismuth lint. After several days it can be removed, the bleeding point will be healed, and the danger of secondary hemorrhage and sepsis is avoided. The use of the cautery for the removal of cartilaginous or bony obstructions can not be too strongly condemned.

At no time in the history of rhinology has the demand for accurate surgical technic been as great as it is today. With cocaine and suprarenal extracts as aids, we can do more extensive and more accurate surgery in the nose than would have been thought possible twenty years ago. The cautery has been a valuable agent in the past, and still has a limited field of usefulness, but in view of more accurate and better methods we should not cling too closely to the old.

912 Chamber of Commerce.

Localized Lentomeningitis with Spinal Symptoms and Otitic Paralysis of the Abducens—G. GRADENIGO—*Arch. f. Ohrenh.*, Leipzig, Aug., 1904.

The author describes a symptom-complex consisting of the following groups of symptoms:

1. Acute otitis media, with or without mastoid involvement.
2. Severe pain in the temporal or parietal region, without rise of temperature.
3. About a month or two after the beginning of the ear affection sudden diplopia sets in, due to isolated paralysis or paresis of the external rectus muscle.

The cases usually get well after about three months, but occasionally a patient dies from a diffuse leptomeningitis. The latter is slow in its onset, beginning with spinal symptoms, and is apt to run an intermittent course.

YANKAUER.

THE REPORT OF A CASE OF MELANOTIC SARCOMA WITH MANIFESTATIONS IN THE NOSE, NASOPHARYNX, MOUTH, PHARYNX AND LARYNX.*

BY WENDELL C. PHILLIPS, M.D., NEW YORK.

A brief history of this rare case will be related as follows:

F. W. ——, age 47, in good health during child-hood. At about 18 years of age, he became aware of the presence of what seemed to be a mole on the right leg just above the knee. This remained practically the same size for a number of years when it began to gradually increase until twelve years ago. After this time, the increase became more rapid until it became large enough so that it was frequently struck by objects which his leg came in contact with. At the same time he became conscious of some itching. The slight injuries which it thus received, together with the efforts at relief by scratching eventually caused it to bleed.

As the growth increased it became softer so that the diagnosis of nævus was made. It was removed by means of strangulation, a silk ligature being employed. The resultant wound healed nicely after a few days, but in about a year another similar growth started about one inch to the left of the original. This grew rapidly and presented a flatter surface. The second growth was partially removed, but the patient says that operation was not thoroughly done. One and one-half years ago, after a reappearance covering a much larger surface in the vicinity of the original growth, a radical operation was done and the entire growth removed under ether anaesthesia. The wound healed rapidly, but almost immediately he began to notice small black specks appearing upon various parts of his body. Some of these have grown considerably and are from one-half to three-quarters of an inch in diameter, while others are not larger than a pin head. A large one has appeared on the left side of the nasal septum which still remains. Another one has made its appearance on the soft palate and involves part of the uvula. There is another one on the right arytenoid cartilage and another in the post-nasal space. There is but little induration or infiltration in these masses and those situated upon the mucous membranes are less inclined to the oval appearance and seem to spread out over the surface. At the present time he has 110 of these small dark growths. They are very dark

* Read at the meeting of the Eastern Section of the American Laryngological, Rhinological and Otological Society, Philadelphia, February 9, 1906.

blue, in fact, almost black in color. He has considerable cough and expectoration and is gradually losing strength and vigor. The diagnosis of melanotic sarcoma has been verified by consultation.

Ten days ago the patient complained of indistinct vision in the left eye and stated that the vision was only blurred from a portion of the field situated near the center. On examination well marked scotoma was discovered. The fundus shows no distinct pathological lesion which might account for the scotoma. A peculiar pigmentation is seen just below the disc and some old spots of choroiditis. This pigmentation is suggestive of the presence of a sarcomatous deposit in this location.

The examination of the urine is negative, but the patient had been drinking a little more freely than usual for a month or so.

Eleven years ago he developed syphilis which has been properly and thoroughly treated.

The history of melanotic sarcoma shows that but little may be hoped for in the way of treatment as these cases always end fatally.

Dr. Geo. H. Fox, who has carefully examined this patient writes that there can be no doubt as to the diagnosis. Dr. Fox has been administering Chaulmoodra oil for about three months. It will be remembered that this is the remedy that has proven so efficacious in leprosy. Dr. Fox has written that he can not be positive that the remedy is having any influence in this case, although some of the spots have become less infiltrated. On the other hand, however, there has been a steady increase in the number of new spots.

The patient has a somewhat waxy appearance, but is still attending to his usual occupation and seems to endure the strain of his work with but little difficulty.

40 W. 47th St.

A Case of Necrosis of the Labyrinth; Operation; Recovery—

L. KATZ—*Berl. klin. Wechschr.*, Oct. 3, 1904.

The patient had suffered for years from otorrhoea. He was suddenly taken with pain, vomiting, fever, vertigo; later, facial paralysis appeared. The mastoid was opened and a sequestrum containing the labyrinthian capsule was found. The opening surrounding the sequestrum was enlarged and the latter allowed to separate spontaneously. The facial paralysis eventually disappeared.

YANKAUER.

AN UNUSUALLY LARGE FIBROUS POST-NASAL POLYP.*

BY WM. W. CARTER, A.M. M.D., NEW YORK.

The growth which I present was removed from the naso-pharynx of an unmarried woman of 19 years, living in a small town up the state. She came to me last August, a year ago.

Her family physician said that a growth had been present in her naso-pharynx during the six years that he had known her, and her mother stated that she had been unable to blow her nose since she was 6 years old. So here we have positive evidence that the growth existed for six years and very strong presumptive evidence that it was obstructing the nose for several years prior to the time that the doctor began his observations.

The patient was rather thin and decidedly hollow-chested, her face presented the usual appearance of one suffering with long continued nasal obstruction. The expression was dull and listless, the nostrils were contracted and the nose poorly developed. A minute quantity of air could be inspired through the nose, but the ball-valve action of the obstruction prevented any from passing on expiration. The patient had no sense of smell.

Examination through the anterior nares showed the mucous membrane over the turbinates to be congested far back through both nostrils; but nearer on the right side, could be seen the glistening surface of a polypus. Examination through the mouth showed a narrow high-arched hard palate and a soft palate bulging forward and almost immobile. A smooth mass almost as firm as cartilage could be felt so completely filling the post-nasal space that the finger could not be passed beyond it.

I cocainized the nose and throat; and, assuming that the growth was attached to some structure in the right naris, since it appeared to be nearer on that side, I introduced a Wright's snare armed with a long wire loop and with one finger in the pharynx tried to get it around the mass but did not succeed after repeated attempts. I next tried to engage it in the loop introduced by way of the mouth but failed. I finally succeeded, after much difficulty, in introducing the adenoid forceps, and depressing the handles so as to grasp the growth as far up as possible. I tore it off from its attachment to

* Read before the Section on Laryngology and Rhinology, New York Academy of Medicine, April, 1906.

what I found out later was the posterior end of the right middle turbinate. Very little hemorrhage followed the operation.

The growth at the time of its removal was twice as large as you now see it. From its cut surface and when it was compressed by the forceps, gelatinous polypoid material exuded. The growth has a distinct pedicle and is divided into two main lobes and several lobules. The sulcus between the lobes received the posterior edge of the septum; which probably accounts for my inability to engage the mass in the wire loop.

There were no adhesions to surrounding structures, but the latter had suffered considerable atrophy from the long continued pressure of the growing mass.

A microscopical examination of the specimen proved to be unsatisfactory, for, not having any formalin at hand, I had placed it in carbolic solution for a short time and this had destroyed the histological relations. Dr. Wright, however, expressed the opinion that it is a multilocular fibrous polyp, the spaces being filled with polypoid material.

There were no signs of any further polypoid degeneration or other abnormal condition of the nose or its accessory sinuses. There was no impairment of hearing though the drums were retracted. When I saw the patient a month later the beneficial effects of the operation had far surpassed anything I had expected to find. Her face was much brighter and her weight had increased ten pounds. Recently she reported at my office. I found that the improvement in her condition had continued. She had gained 25 pounds and had developed into a robust woman. The nose appeared normal and there was a partial return of the sense of smell.

Various methods have been advocated for the removal of these growths; among which is that of Prof. Annandale of Edinburgh. He chloroforms the patient, introduces a mouth gag, divides the soft palate, holds the flaps apart by silk ligatures passed on either side, seizes the pedicle of the growth with a pair of long forceps and pulls it off. He then plugs the nasal cavity with gauze and sutures the flaps.

The writer believes that this is an extremely radical procedure and should be used only when other means have failed. He also believes that each case is a problem in itself and must be solved by a study of the conditions found present. In this case the following points seemed of special interest:

1. The early development of the growth.
2. The effects produced by such long continued complete obstruction to nasal respiration.
3. The very gratifying results following the removal of the growth.
4. What almost amounts to the development of the sense of smell after the 19th year.
5. That such complete obstruction to nasal respiration should exist so long and yet the hearing not be affected.

69 W. 50th Street.

Two Cases of Cerebellar Abscess, Cured—FERNAND ALT—
Monatschr. f. Ohrenh., Berlin, July, 1904.

Case I. The patient, male, 41 years old, had suffered since childhood from otorrhoea. For five weeks he had suffered from pain in the ear and head. On admission to the hospital his temperature was 39 and his pulse 60. There was no vertigo or evidence of any disturbance of the cerebral nerves. The left mastoid was swollen and tender, and there was a profuse, foetid discharge from the ear with cholesteatoma. A fistula led from the surface of the bone to the antrum, and when this was enlarged, cholesteatomatous masses and sequestra were removed. The necrosis extended to the petrous bone, and from a fistulous opening in the dura, pus and brain tissue escaped. The patient recovered.

Case II. Male, 70 years old. After acute otitis media had persisted for three months, the patient developed mastoid tenderness headache and severe vertigo. There was no rise of temperature or bradycardia. The outer surface of the mastoid was apparently normal, but the deeper parts were destroyed and a fistula led around the medial side of the lateral sinus through the dura into the cerebellum. The cerebellar abscess was opened and packed with iodoform gauze. The patient recovered in about two weeks.

YANKAUER.

**REPORT AND EXHIBITION OF TWO INTERESTING CASES;
ONE A CURIOUS LARYNGEAL LESION AND THE OTHER
AN UNUSUAL FORM OF STAMMERING.**

BY G. HUDSON MAKUEN, M.D., PHILADELPHIA, PA.

Case I. The patient, D. A. L., is about 60 years of age and has always been in fairly good general health. Four years ago, he had a severe attack of gripe, with which he was laid up for several days and which left him with a sore throat accompanied by tickling and hoarseness. For two or three years he had a more or less continuous cough with expectoration. There is no family history of phthisis, nor is there any evidence of pulmonary lesions. He had a chancre twenty years ago, of which he claims to have been speedily cured, and he also remembers having gotten a reed bird bone in his throat about the time of the attack of gripe, which gave him considerable pain and annoyance for a time, but he thinks it passed down with some dry crusts of bread that he swallowed.

The laryngeal lesion is an exceedingly curious one and is fairly well illustrated by the accompanying drawings. The left arytenoid cartilage, as you see, appears to be dislocated, and there is a large fistulous opening running down between it and the left wing of the thyroid and entering the larynx, probably, through the ventricle between the false and true cords. A ligament is clearly seen a half or three-quarters of an inch down in this fistulous tract, which appears to be about on a level with the vocal cords and which I have sometimes thought may be a portion of the left cord itself.

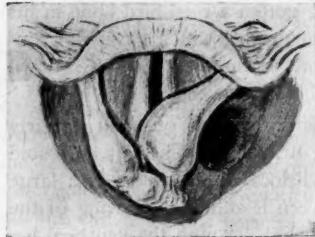
I have studied the conditions with great care and I find that in inhalation the fistulous tract opens and the air appears to enter the larynx, partially at least, by this route, and in exhalation the arytenoid with the ary-epiglottic fold oscillates freely between the two openings, the breath, however, escaping largely if not entirely through the normal channel, but during vocalization the arytenoid and ary-epiglottic fold are drawn over to the side and the fistulous tract is entirely closed.

This curious lesion appears to give the patient but little trouble at present and aside from a slight hoarseness he would scarcely know that there was anything unusual in the condition of the larynx.

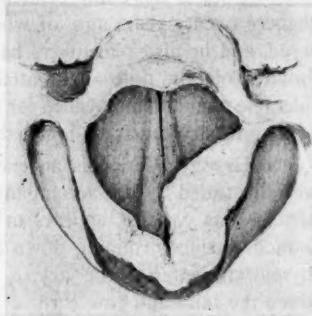
Case II. This patient presented himself for the first time, in my clinic at the Philadelphia Polyclinic Hospital, yesterday afternoon

and I bring him before you because he illustrates unusually well in his speech an important factor in the immediate causation of stammering in the great majority of cases.

The patient is 23 years old and has stammered somewhat in the manner that he does now for fifteen years. His speech was normal until he was 8 years of age, about which time he had a dream during the night. He thought that he was at a large fire, where there were numerous engines, and he got up and ran down stairs where the other members of the family were, and he was so frightened about it all that he could not talk. He has stammered in his speech continuously since that time and as you will presently see it is a very curious stammer, in that he tries to speak mainly upon the ingoing instead of the outgoing column of breath. It is what Wylie has called



During Inhalation.



During Vocalization.

drawback phonation, and it is probably the result of persistent futile attempts to speak in what may be called the *pushout phonation* or, in other words, with the natural expiratory effort.

These patients frequently find that when the speech becomes blocked by the closure of one of the various stop positions, either in the laryngeal or oral mechanisms of speech, the only recourse is in a reversal of the column of breath, which, temporarily at least, removes the blockade and makes some sort of speech possible. In this case almost all of the words are uttered upon the drawback phonation and only an occasional one is given in the moral manner, so that if you were in an adjoining room you would suppose that two persons were talking instead of one, so peculiar is the result of this defection.

1627 Walnut St.

THE FALSETTO, OR EUNUCHOID, VOICE.

BY HOMER DUPUY, A.M., M.D., NEW ORLEANS.

The persistence of the puerile voice in the male after puberty is a vocal anomaly but too infrequently recognized and appreciated in its proper aspect by the profession at large.

The general ignorance regarding the nature and treatment of this condition is readily proven by the dearth of literature on this interesting subject. There is not to be found the faintest allusion to this anomaly even in works solely devoted to laryngology.

While the falsetto in man is not very common, yet when present, it is to be regarded as a positive affliction, carrying with it a most unmerited stigma, which follows the individual in all his social and business relations. For such reasons alone, it is worthy of general recognition.

It is creditable to American laryngology to note that this theme had not yet been touched by writers' pen when Mulhall, of St. Louis, read a paper before the American Laryngological Association, in 1888, on "The Cure of the Falsetto Voice." Bennett and G. H. Makuen, of this country, have also contributed to the literature of this subject.

At a meeting of the Orleans Parish Medical Society, December 10, 1902, I presented several cases of this nature. On that occasion, I gave due credit to Drs. de Roaldes and King for presenting to the Society in 1899, a case of falsetto voice successfully treated at the Eye, Ear, Nose and Throat Hospital, New Orleans. In Europe Castex, Natier, Moure, Beausoleil and Biaggi, have reported similar cases treated by various methods and with equally good results.

In both sexes at puberty, the larynx while retaining its anatomical configuration grows rapidly during a period of from six months to two or three years, until it attains its final size. In boys it alters in the proportion of from 5 to 10, and in girls from 5 to 7. In the male, the larynx undergoes enlargement in all of its diameters, increasing, however, more in depth than in height, which causes a lengthening of the vocal cords, thereby causing the high-pitched, puerile voice to be replaced by the deeper tones which characterize the man. In girls, the enlargement of the larynx is exceedingly slight, which explains the persistence, without a break, of those tone qualities peculiar to the gentle sex. The uncertainty of the boys' voice at the period of mutation is a commonly observed and curious phenomenon.

This intimate association between the genital organs and the vocal apparatus is not a modern observation. Aristotle defines the vocal changes in the male at puberty, and notes the effect of castration on the quality of the voice. The eunuchs of the East invariably possessed the one feminine attribute, at least, of a thin, high-pitched voice. Emasculation at pubescence was resorted to in the early days of the Italian opera for the specific purpose of preserving the falsetto quality in the world-famed male soprano singers. Coming to more modern days we had, until recent times, the castrated male singers who were for years the musical glory and the moral shame of the Sistine Chapel choir of Rome.

When we hear one who, at least, bears all the outward appearances of a full-fledged man, speak in a feminine tone of voice, the impression is naturally produced that the individual who "talks like a sissy" is by this sole evidence of doubtful sexuality. In the vast majority of instances this suspicion is unfounded and unmerited. Most of these unfortunates are to be included in that class of individuals afflicted with a eunuchoid voice-production, but they resemble the eunuch only in voice, there being perfect genital development. The falsetto in the male is essentially a false voice, of a thin, shrill quality, but while high-pitched it is not of a pure soprano type, for it wants timbre and is weak; nor is it the bitonal voice of recurrent paralysis, or the polytonal of laryngeal papillomata. It must be heard to be differentiated. When these subjects are instructed to read aloud in the three registers, the low, medium and high; it is readily perceived that the lower tones are totally wanting, the medium are weak, while the upper register is the only one which they seem capable of using without effort or fatigue. One of my patients, while undergoing treatment, complained that it was not only exceedingly difficult and fatiguing to attempt speaking in the lower tones, but that "it scratched his throat."

This vocal anomaly originates at that period of life when physically the boy is man in everything but voice. As a rule this condition is relieved at some indefinite period after puberty. Some hitherto untried vocal efforts are attempted, which bring into action those muscles which control the lower register. Repeated attempts in this direction result in automatic response to future requirements, which finally secures fixation of the deep masculine tones. The change, however, may occur spontaneously. It is said that the celebrated Lablache found his voice changed into an excellent bass in a single night. More rarely, and yet oftener than is generally believed, the falsetto persists beyond the second into the third decade, and if not

treated continues during the rest of life. Trifiletti (*Arch. int. de laryngol.*, 1887), reports having seen a man, aged 41, who still preserved the head voice of childhood. The writer knows a barber who is over 50, the father of a large family, and who yet speaks in the tones of a gosling. This head voice has been developed by self-education. Makuen, of Philadelphia, cites the case of an esthetic clergyman who purposely assumed it, claiming that in the fitness of things this mellifluous voice best suited his ministerial functions. Comedians have cultivated it and retained this treble pitch through long theatrical careers. In the Chinese theatre men are brought up from childhood to be pseudo actresses, and are trained by vocal exercises to retain the puerile type of voice. When once acquired by self-culture it has proven difficult to return to the former normal register. Young men playing female parts in college theatricals have had to undergo treatment for the restoration of the deep tones.

Laryngoscopic examinations in all of the cases which have come under my observation revealed without exception an apparently normal larynx. In some instances there may have been present a noticeable hyperemia of the laryngeal surfaces, which I attributed to hypertension of the parts, induced by the false position of the larynx. Beausoleil (*Gas. hebd. d. sc. méd. de Bordeaux*, 1895) who examined a man 42 years old with a falsetto, claims to have observed peculiar contractions of the larynx. Castex (*La Voix, Maladies de*) states that in most cases he had observed nothing abnormal; in other instances, however, the larynx retained the smaller dimensions of childhood. In one case the cords in phonation adducted but feebly, leaving a fissure between them.

This anomaly can also be induced by violent excitation of the nervous system, as evidenced by a case reported by Castex of a boy, aged 14, in whom the eunuchoid voice immediately followed fright, the subject having been bitten by a dog. The laryngoscope showed imperfect adduction of the cords. Rumbold (*Hygiene of the Voice*, 1898) observes that the falsetto in the adult man is due to early disease of the larynx; the morbid process checking its further growth, there results an abnormally small vocal box. This finding does not agree with the examinations of most observers, who, with myself, have found that the laryngoscopic images in these cases rather reveal a larynx of large diameter, which by its size seems anatomically formed for the baritone type of voice, the vocal antipode to the register then in use.

The laryngoscopic study of all my cases furnished the strongest evidence in every instance that this head voice was the result of a physiological error, induced both by the false adjustment of the

phonatory muscles and by faulty breathing. To form a clear conception of this perverted action, it is essential to understand what is the position of the larynx in chest tones and in head tones. We need only recall that the female has a greater range in the head tones, while in the male the chest notes are the more prominent. It is a common observation, questioned only by a few, that in the head voice the larynx is elevated, in the chest voice it is depressed; opposed sets of muscles are brought into play by these movements, which necessarily affect the tension of the vocal ligaments, which in turn alters the pitch. In the medium tones the larynx is poised by the simultaneous and opposed action in the two sets of muscles. Held in equilibrium by these counter forces, the larynx is placed in a position for the voice production of a baritone, which represents the average type of male voice used in ordinary conversation. Now, in the falsetto of the male, the larynx is held in an abnormally high position, which produces shortening and increased tension of the cords, with the resultant higher pitched tones. This elevation of the vocal box is due principally to over-action of the elevators of the larynx, the genio-hyoid and mylo-hyoid muscles. The over-action of these muscles is probably brought about by misdirected efferent impulses. The lack of intensity which characterizes this voice is in a measure due, I believe, to faulty respiration. In all of my cases there was a marked predominance of the costal over the more normal abdominal type of breathing. In the former type of breathing, the lungs are not filled to their maximum capacity, necessitating a feeble expiratory act, which in itself is no inconsiderable factor in the production of this head voice.

Several cases are reported in which severe laryngeal inflammation occurring at puberty resulted in a falsetto, which persisted until relieved by treatment. In such instances, there seems to be an instinctive tendency to speak in the upper tones, which, as it requires less muscular effort, minimizes the work to be performed by an inflamed and physically weakened larynx. The theory just advanced to explain this condition, will suffice, for even in such cases the want of muscle balance favors the high position of the larynx, and when inflammation has subsided the falsetto continues purely from lack of proper adjustment of the extrinsic, and it might be to some extent, of the intrinsic, phonatory muscles.

The following cases have been selected from my series. They will serve to illustrate the anomaly and will also outline the method of treatment adopted for its relief:

Case I. E. H., aged 23, referred to me by Dr. W. F. Pettit, for the purpose of relieving him of a vocal condition which stigmatized

the young man among his acquaintances as being of doubtful sexuality. His sexual organs were of normal size and functionally serviceable. Laryngoscopic examination revealed a large normal larynx, evidently formed by Nature for the lower register, which he now uses. His musical sense seemed fairly developed, which fact, in my opinion, assisted materially in a speedy cure. My treatment consisted in first singing a high note, which he immediately repeated. From this pitch I gradually brought him down the scale, by whole tones, to his limit in the lower register. I kept his voice fixed in the lower tones and for ten or fifteen minutes made him repeat this note in a loud, forced expiration, preceded by a deep inspiration. I also instructed him to distend his abdomen so as to insure full diaphragmatic action. I then made him read aloud in the deeper register, in a monotone. Isolation and absolute silence were impossible in this case, so I enjoined him to refrain from all unnecessary conversation, to practice breathing exercises, read aloud at night, placing his voice in the deep register by singing his way down and then keeping up the monotone method. On the following day his voice had deepened considerably, there being, however, a tendency to the former pitch when taken off his guard. On the fourth day of treatment his voice was permanently fixed in the lower register, which he retains to this day.

Case II. A. G., aged 25, referred to me by Dr. L. G. LeBeuf, of this city, who recognized the vocal condition to be that of a falsetto. Although bearing all the outward marks of a matured man, he presented the typical eunuchoid voice, which subjected him to the most humiliating remarks from his associates. He found that this feminine voice proved a positive obstacle in his social and business relations, several positions having been refused him on account of this "sissy-like" voice. He was very unhappy and sought relief at my hands. I determined that his genital organs were perfectly developed, he furthermore assured me that he was sexually "equal to all emergencies." The larynx was of large diameters and presented nothing unusual to the laryngoscope. The same line of treatment was pursued as in the case reported above. Endowed with a musical ear, he readily placed his voice in the lower register at the first sitting. On the third day the cure was certain, and after one week it was notable that even with the greatest effort he could not longer speak in a falsetto. He developed a sonorous base voice of great depth, which was in marked contrast to the puerile quality of tone which existed previous to the treatment. A year has elapsed since he first consulted me and there has been no return to the falsetto. The cure is undoubtedly a permanent one.

In the above report of cases the method of treatment is already outlined. It consists essentially in muscle training and vocal voice placing by means of vocal and breathing exercises. As the voice is already pitched in a high key, it will be a decided gain to begin the intonations in the upper tones and descend the scale by whole intervals until the patient reaches the lowest note in his chest register. Fixation of this low tone is obtained by repeating it in forced expirations, each expiration being preceded by a deep inspiration.

This exercise is kept up from five to ten minutes, after which period the patient, assisted by the instructor, who gives the initial tone, reads aloud in this lower register in a monotone. During the reading exercises every inclination to return to the upper register must be resisted. If the patient is unable to fix or if he loses the lower notes when once given, we must take his falsetto tones as a starting point and sing down the scale gradually, as at first.

It is preferable to give several such sittings a day. During the intervals isolation and absolute silence must be strictly enforced; for, in the beginning of the treatment, there naturally exists a tendency to revert to the falsetto tones. After the second or third day, when the patient has acquired some vocal assurance for the lower notes, between the office visits, he may continue these exercises at home. If he be endowed with a musical ear, he can safely be entrusted with this task. In fact, I am convinced that the more musical patient will find the method easy and the cure certain.

A careful examination of my cases revealed that deficient breathing is always associated with this condition. Therefore, breathing exercises, insisting more particularly on thorough abdominal distension, must form a part of the treatment.

The finger placed on the thyroid notch, and pressed forcibly on this point, while the patient is directed to speak or sing, does lower the voice. Makuen used this method successfully in one instance. I can testify to its efficiency, as I frequently resorted to it in conjunction with the vocal exercises.

All of my cases have been permanently cured. A return of the condition means improper treatment. Patience, time, well-directed efforts and enthusiasm, will secure a certain victory over a vocal anomaly which must be regarded as a real affliction, and one which it is the duty of the medical profession to relieve.

Medical Bldg.

REPORT OF A CASE OF MELANCHOLIA RELIEVED BY ETHMOIDAL OPERATION.*

BY WM. B. SHIELDS, M.D., ST. LOUIS.

The nervous derangement accompanying many cases of retention empyema of the ethmoidal region has been recognized for many years, varying from slight headaches to severe cerebral disturbances, usually manifesting itself in melancholia. Grünwald speaks of having seen two cases of this nature in which the melancholia was so profound that suicide was attempted. One of these cases was treated by Grünwald and, quoting his language, "The man was reduced to apparently complete imbecility so that for six months he sat brooding, and was incapable of attending to any business. He finally attempted suicide and had to be constantly watched. He was operated on for double empyema and was completely restored to health. The other case of a similar nature was treated by Killian with the same result."

Orwin, of London, has reported a case of mania which had been confined to an asylum and upon whom he operated for nasal polypus, the patient making complete recovery after the operation. Lennox Brown has reported three cases of nasal polypi accompanied by mania, the latter being cured by removal of polyp. In my opinion it was the drainage to the ethmoidal cells allowing the egress of pathological secretions that resulted in the relief of the mania.

The case reported here by me: J. H., newspaper man, American, aged 29. Had for two years been suffering with a dull aching headache which was worse at times, accompanied by dullness and inability to fix his attention to business. One year previous to my seeing him, he had been treated by a neurologist and while under treatment had attempted suicide by cutting his throat. He was confined to an asylum for six months and was discharged in an improved condition. Two months after the discharge he began to suffer from some of the old symptoms, headache, extreme melancholia and loss of memory. He was recommended to me by a medical friend on account of his complaining of extreme pressure at the root of the nose. Upon examination I found the patient had a half degree of fever, was very nervous and in a condition of extreme depression. The nasal examination revealed the middle turbinates on both sides enlarged and wedged in between the septum and outer walls of the

* Read at the meeting of the Western Section of the American Laryngological, Rhinological and Otological Society, St. Louis, February 22, 1905.

nose. By the use of suprarenal gland, I managed to discover pus on one side. Posterior rhinoscopy failed to reveal pus, but showed the posterior ends of middle and lower turbinates enlarged. I was convinced that the aprosexia, headache and melancholia were the result of the local condition. The patient readily agreed upon an operation in hopes of relief as his suffering at that time seemed intense. I operated under cocaine anaesthesia on the right side, which had revealed pus on examination, taking away the anterior half of the middle turbinate and then scraping out the ethmoidal cells. I found some pus but not so much as I expected. In a few days the patient said his head felt lighter, otherwise the symptoms were the same. In ten days I operated on the other side and found more pus than the first operation revealed, which no doubt, was due to better drainage on the right side. In both ethmoidal regions I found the bone eburnated. I did a second curettage on both sides a month later as some pus was still present.

The patient, whom I had under immediate observation for four months, improved slowly but decidedly and three months after the first operation resumed his business as a newspaper man. I have seen him several times during the past year and he tells me that his mind is perfectly clear, memory as good as it ever was and that he feels that he has been completely restored to health. He is now living in Chicago, being connected with one of the large daily papers in that city.

Linmar Bldg.

**The Surgical Treatment of Peripheral Facial Paralysis by
Grafting the Facial into the Hypoglossal—G. ALEXANDER—
Arch. f. Ohrenh., Leipzig, July, 1904.**

The author reviews the literature of the subject and reports a case. Three methods have been tried. 1. Grafting the facial into the spinal accessory. 2. End to end suture of the facial and the proximal end of the divided hypoglossal. 3. Grafting of the facial into the hypoglossal. In cases operated by the first method the associated involuntary contractions of the shoulder and face have not entirely ceased in any of the reported cases. In the case operated by the second method, the one-sided paralysis of the tongue became permanent. The author's case was operated by the third method. The paralysis of the tongue disappeared after six weeks, but sufficient time has not yet elapsed to determine the functional result in the facial.

YANKAUER.

A SAFE AND ADEQUATE METHOD FOR OPENING RETRO-PHARYNGEAL ABSCESESSES IN CHILDREN.

BY E. L. MEIERHOF, M.D., NEW YORK.

During my term of service at the out-door department of Mt. Sinai Hospital, I have observed some 25,000 ear-throat patients, and among this number I have seen some fifty cases of retro-pharyngeal abscess. Not such a large number of cases, it is true, but compared with the records of the various institutions devoted exclusively to eye, ear, nose and throat work, it is quite a good many. Possibly the relatively large number of cases seen in my service at the Mt. Sinai institution is due to the fact that more children afflicted with other diseases are brought there.

In nearly all of my cases, the children were under three years of age and it was difficult to obtain a history of the antecedent disease which was responsible for the infection. In the majority there was more or less external glandular enlargement, either of the submaxillary or retro-maxillary region, or both. We rarely saw the cases early and in most instances they had already undergone medical treatment, without a correct diagnosis having been made.

As is well known, these abscesses are due to the disintegration of the glands that lie between the pharyngeal wall and the spinal column, which glands, as the anatomists have pointed out, disappear after the fifth or sixth year of life. Hence the retro-pharyngeal abscesses of older people, which occur but rarely, except those cases due to spinal lesions, must be cellular in their structure, whereas those of young children are of a glandular nature.

The cases were usually brought on account of the noisy and restless sleep. Deglutition is not always interfered with, which is quite surprising. The cry, as has been pointed out by all writers, is peculiarly sharp and metallic and the face is pallid and wears an anxious expression.

There is only one reliable method of examining the throats of these young patients who are frequently nursing, and that is by the forefinger. In older children a mouth gag had better be used in conjunction with the examining finger. In some cases the abscess wall is so attenuated that an abscess may be ruptured by the finger during examination and where the abscess is very prominent it may even

occur from the tongue depressor. Frequently the situation of the abscess is somewhat lateral, in which case it has the appearance of being a peri-tonsillar affection.

The object of this note is to call attention to a safe method of opening these abscesses because the procedure is not always devoid of danger, cases of sudden death having occurred from an emptying of the contents of a retro-pharyngeal abscess into the larynx, which was perhaps itself edematous.

Most writers recommend opening with a pointed bistoury, taking the precaution to guard the greater part of its edge by wrapping with adhesive plaster; others recommend using the point of a grooved director. The first method is unsatisfactory on account of the small opening which is difficult to find if one wishes to widen afterwards and occupies too much time in an operation which should be done very quickly. This objection applies with equal force to the director.

To overcome the time element and to make an adequate opening for free drainage, I would recommend the use of a pair of dressing forceps of a length best suited to free manipulation and which are bent on the flat with the beaks somewhat curved and moderately pointed.

The child should be seated in an upright position on the knee of an assistant, the assistant placing one of his hands on the child's fore-head and encircling the arms and body with the other. I instruct the assistant, at the moment the abscess is entered with the forceps to throw the child's head and body forward; while in this position the forceps are withdrawn with the blades opened, thus allowing the abscess to be thoroughly evacuated and good drainage established.

Instead of holding the child in an upright position the method of allowing the head to hang over the end of the table might be employed, and the abscess evacuated in this manner. This may perhaps lessen the danger of pus entering the larynx, but since I have had so much success with the former method I have had no occasion to substitute another.

1140 Madison Ave.

SPONTANEOUS HEMORRHAGE FROM AN INFLAMED TONSIL.

BY GEORGE F. KEIPER, A.M., M.D., LAFAYETTE, IND.

Dr. A. M. Mayfield of Montmorenci, this county, had the writer called November 19th, 1904, to consult with him over a case of spontaneous hemorrhage of the right tonsil. The history is briefly this: Clarence C., age 30, well nourished, a farmer living seven miles west of this city, is subject to attacks of peritonsillar abscess. Two days prior to this date the doctor had opened and evacuated a right peritonsillar abscess. The quantity of pus thus evacuated was very great and the odor fetid. The tonsil and peritonsillar tissue were so swollen that the mass extended way past the median line, nearly touching the other tonsil, leaving only a chink for difficult breathing. No hemorrhage in particular followed the incision made by Dr. Mayfield. The patient's health had been very good save for the recurrence of the quinsy. About 1 o'clock in the morning of the date above mentioned he began to bleed from the throat. The doctor was summoned in due time and the usual remedies having failed to check the hemorrhage, the writer was summoned at his suggestion, and arrived at 10 o'clock in the morning. He found the tonsil and its surrounding tissues swollen as above, the hemorrhage evidently being posterior. After trying for an hour and a half to stay it without success, the patient was removed to St. Elizabeth Hospital, where he arrived at noon. In the meantime, Dr. George F. Beasley was called as additional counsel at the suggestion of the writer, fearing the necessity of litigation of the carotid. We ran the gamut of remedies usually used for the control of hemorrhage, seeing it finally cease at 2 p. m. He insisted on leaving the hospital the Tuesday following. He went out against our will. The same night at midnight, the writer was telephoned that the hemorrhage had recurred. He was ordered to be brought to the hospital again without delay, which was done. Again the oozing was very marked posteriorly and did not cease until 2 o'clock of the same afternoon. We found a spot of hemorrhage anteriorly which was packed to its depth with absorbent cotton worked full of equal parts of antipyrin and tannin. It ceased at that point. The case being very unusual, the writer asked several of the doctors as they came to the hospital to also see the case. At the suggestion of Dr. Charles Hupe, we gave him eight grains of

* Read before the Western Section of the Laryngological, Rhinological and Otological Society, St. Louis, February 22, 1905.

calcium chloride every two hours until three doses were taken. The hemorrhage ceased as soon as the second dose was taken. Our patient was much exsanguinated and weak.

The condition then was as follows: The tonsil and peritonsillar tissues were swollen in all directions, and, nearly touched the other tonsil, passing the median line. It was quite hard and dense; malignancy was suspected. However, as soon as the hemorrhage ceased, it began to decline in size until, when he left the hospital, December 3rd, it was down almost within its pillars in the fauces.

The relation of the hemorrhage to the abscess: The writer was asked by the family if the incision made by Dr. Mayfield could have caused this hemorrhage. The answer was unqualifiedly "No." The hemorrhage was distant from the incision. The incision was in the peritonsillar tissue, the hemorrhage evidently in the tonsil and posteriorly. The patient was in imminent danger of suffocation when the pus was evacuated. Had the abscess not been opened the hemorrhage would probably have been worse because undoubtedly it would have eroded its way into larger vessels than it did, probably into the carotid itself.

The relation of the hemorrhage to the patient's general condition: Because of a similar experience reported by the writer in *THE LARYNGOSCOPE*, November, 1898, in which albuminuria was no doubt the cause of the spontaneous hemorrhage, the urine of our patient was examined. The result was negative. In fact, a careful physical examination revealed nothing which could have been a cause.

A few cases like the above have been reported: Somers read a paper before the Section of Laryngology of the American Medical Association at the 1904 meeting (*Journal A. M. A.* Oct. 15, 1904) in which he covers the subject thoroughly. He quotes Jenkins (*Journal A. M. A.* Vol. XXX) as having observed, in an epidemic of 65 cases of tonsillitis, a fatal case from hemorrhage caused by the sloughing away of the left tonsil. This occurred upon the ninth day of the disease. Also Bokay and Alexy (*Jahrb. f. Kinderh.* 1881) observed a boy of four years who with tonsillitis of four weeks' duration had two hemorrhages with death following. Autopsy showed the tonsil and surrounding tissues filled with pus, and communicating with the carotid artery. Again Jacobi and Ewing (*Phila. Med. Jour.* June 4th, 1898) reported a case of a child who had four hemorrhages at intervals of several days. Five months later autopsy showed a large cavity between the right tonsil and pharyngeal wall filled with blood from a perforation of the carotid artery.

He further reports a case of Brewer's (*Yale Med. Jour.*, Dec., 1898) where spontaneous rupture of peritonsillar abscess occurred with slight hemorrhage which was repeated several times. The patient died of exsanguination.

Another case which he reports is that of Dunn (*Med. News*, May 9, 1891) where a hemorrhage took place twenty-four hours after the abscess discharged spontaneously. It was repeated in forty-eight hours, and several severe hemorrhages occurred within the next three days. The patient's condition became so critical that it became necessary to ligate the common carotid artery. Rapid recovery occurred. Chappelle (*Jour. Laryngol. Rhinol. & Otol.*, June, 1900) reports ten cases in which but two recovered, and these had their carotids tied.

Prognosis. It is certainly grave; especially in view of the cases quoted by Somers in his article. To say the least, they are not pleasant to meet, and give the surgeon very great anxiety whenever he meets such a case.

Treatment. This resolves itself into anything in the ways of remedies usually used for that purpose. Attention is especially directed to the use locally of adrenalin chloride solution (1:1000) and the mixture of antipyrin and tannin (equal parts with just enough alcohol to dissolve). Internally calcium chloride given in eight grain doses every two hours until three doses are taken promises much. If the hemorrhage is very severe indicating involvement of larger blood vessels, no time is to be wasted with local remedies. Surgical interference in the ligation of the carotid is indicated judging from the frightful mortality without it, and the excellent results with it. Chappelle reports a case of spontaneous hemorrhage in which he opened the abscess cavity, cleaned it out and packed it.

A CASE OF IDIOPATHIC HEMORRHAGE IN THE MIDDLE EAR *

BY C. P. LINHART, M.D., COLUMBUS, OHIO.

A. B., merchant, age 42, came to my office in August, 1900, complaining of a ringing in his left ear, which had been bothering him for a week or more. There was slight pain in middle ear. He had never experienced any previous trouble with his ears. Upon examination, I found impacted cerumen, and after its removal he expressed himself considerably relieved. On inflation, the membrane of the tube showed some thickening, with a slight catarrhal condition, which practically disappeared after two or three treatments.

On December 28th, 1904, he again reported to me after having passed a restless night with severe pain in the left ear. He went to bed feeling all right, but waked up sometime during the night with a severe pain and feeling of fullness in the ear. By the time he came to me the pain had somewhat abated. On examination I found the left ear drum membrane very much darkened, as if it were covered with impacted cerumen. After attempting to remove the supposed cerumen with warm water, nothing coming away, I again examined the ear to find it the same color, with membrane slightly bulging and lustreless. I then gently inflated the ear and found considerable mucus in the tube, with some rales in the middle ear. After inflation, he expressed himself as feeling so much better, that I decided not to incise the drum. I prescribed a teaspoonful of boric acid to a cup of hot water, to be used with a syringe, in the ear every two hours during the day. In the evening the membrane was not quite so bulging, and appeared a little more natural. The ear was again inflated with the same apparent relief as before.

The next morning there was a slight bloody discharge, quite dark in color, from a small perforation in the anterior inferior quadrant. The membrane had cleared up considerably over the upper and posterior part. On inflation some more of the discharge was forced into the meatus. There was no infection, the discharge stopped, and the opening closed in a couple of days. Within a week's time the trouble had cleared up.

With the exception of having a tendency to constipation, which at times became chronic, the patient was in good health. He said

* Read at the meeting of the Middle Section of the American Laryngological, Rhinological and Otological Society, Toledo, Ohio, February 24th, 1905.

when he was a boy, he was subject to nose bleed, but since reaching maturity had had trouble of this kind only a few times. The mucous membrane of the nose was thin and easily abraded, and plentifully supplied with blood vessels. I saw him again February 20th, 1905, and found the middle ear practically normal, there being only a slight tubal catarrh. He said the ear felt better after inflation. The idea suggested to me was, the condition of the mucous membrane in the tube and middle ear was somewhat similar in its peculiarity to that in the nose, and that it was a case of simple hemorrhage in the middle ear.

A Severe Case of Mixed Infection in the Pharynx—N. SACK—
Monatschr. f. Ohrenh., Berlin, Aug., 1904.

The patient, a boy 8 years old, the son of tubercular parents, was infected during infancy with syphilis by his wet-nurse. Just previous to the throat infection he had been suffering from pulmonary syphilis, which yielded readily to iodide of potassium, and he was still taking the iodide when the throat trouble began. The latter began with pain, rise of temperature, enlargement of the cervical glands. An ulcer appeared on the left tonsil covered by a grayish membrane, and deeply excavated. Similar ulcers appeared on both pillars, on the uvula and on the lateral pharyngeal wall. Diphtheria and tubercle bacilli were absent, but the spindle-shaped bacillus of Vincent was found. In spite of antiseptic treatment and iodides, the ulcers coalesced and spread rapidly, and the progress of the disease was only arrested upon the administration of hypodermic injections of mercury.

The author regards the case as one of Vincent's angina, rendered unusually virulent by being superimposed upon a gummatous basis. He quotes a number of similar cases, and reviews the literature of mixed infections in the throat and elsewhere. YANKAUER.

A PLAN TO AVOID HEATING THE MIRROR OF THE LARYNGOSCOPE.

BY CHARLES GRAEF, M.D., NEW YORK.

Among the devices for overcoming the fogging, by the patient's breath, of the surface of mirrors used in examining the upper air tract, the one most relied upon is that of warming the mirror over a lamp. This commonly results, after a comparatively short time, in the destruction of the mirror because the mercury coating becomes overwarmed from time to time. If the face of the mirror is watched during the heating, it will be seen that as it warms a film of moisture evaporates from its surface passing in front of the circumference and finally disappearing about the centre. Now if the mirror is quickly removed just after this film has faded, it will be warmed to the right degree and can be safely introduced at once into the pharynx. The life of the instrument will be greatly, if not indefinitely, prolonged by this care.

The examiner in talking with his patient or those about him, not infrequently forgets to watch the mirror however, and after a few such lapses he finds his mirror is ruined. Such injury to these instruments is especially common in clinics where they are handled by various men; and where students are being trained in their use, the likelihood of injury to the equipment if of course still greater. Again the electric light is now very widely used in place of the gas or kerosene lamp, and in such event a spirit lamp must be provided to warm the laryngoscope, or some other method adopted to overcome the difficulty.

A very simple method which I have used for a long time with great satisfaction is as follows:

Dip the clean, dry mirror into a bowl of Lysol solution. This compound of soap and carbolic acid is an excellent antiseptic for the office desk at all times, and if kept fresh acts exceedingly well in this dual capacity. A laryngoscope mirror warmed to the limit of safety for the instrument, and of comfort for the patient, will keep an undimmed surface in the pharynx for about three-quarters of a minute. The same or even a longer time for such examination can be secured with a mirror equally clear, by wetting with the Lysol solution, and this with less time and trouble than is necessary for proper warming—a point of importance to the worker at a heavy clinic.

1076 Boston Road.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Stated Meeting, April 26, 1905.

LEWIS A. COFFIN, M.D., Chairman.

Report and Presentation of a Case of Thyrotomy with Subsequent Laryngectomy. By WALTER F. CHAPPELL, M.D.

The patient, Mr. T., had a thyrotomy performed October 22, 1901, for cancer of the larynx. The growth was confined to the left vocal cord, which was removed at the operation. The case was reported in the *New York Medical Journal*, August, 1903. Mr. T. did very well for three years, following his usual occupation, and his voice was so good that every one understood him. When a distinguished foreign laryngologist was here last fall, he saw the patient and said that he might consider himself cured. Soon after this, the patient consulted Dr. Campbell for a slight difficulty he experienced in breathing when he walked fast or went up stairs; but no tumor or growth of any kind was detected. Shortly after this, Mr. T. had a haemorrhage from the throat one morning, and upon examination Dr. Campbell found, in the anterior commissure, three long flat growths. They were about half an inch long, pale at the margin with a distinct vessel through the centre, and one was bleeding. He immediately suspected a recurrence of the epitheliomatous growth, and Dr. Knight who saw the patient the same morning concurred in this opinion. Dr. Wm. T. Bull also saw the case, and it was decided that it was necessary to open the larynx again and make a complete thyrotomy. The right vocal cord had not been touched at the first operation.

A tracheotomy was performed on November 20th, 1904, and on the 27th, first a thyrotomy was performed and then a laryngectomy. The interior of the larynx was filled with a rapidly growing mass which came through the fibrous tissue that held the cartilage together. After consultation with the family, it was decided that there was nothing to do but remove the larynx. The operation was the usual one, and there was nothing special about it except that Mr. T.

bleeds very readily and he was under chloroform for three hours, and a great deal of time was occupied in stopping the haemorrhage. The trachea was cut off and brought forward and sewed to the skin with silver sutures, the larynx was turned up, and the oesophagus and pharynx sewed together. After the operation, Mr. T. rapidly recovered and has continued to do well up to the present time. The only trouble that occurred was that one or two of the sutures broke through the cartilage and let the trachea sag back on the right side. On the left side there was complete union. He was not fed through the mouth for ten days, but after that began to swallow, and had no difficulty except when the large tube was first removed. It was thought well to get rid of this as soon as possible; and, as he was in the house, it was taken out; but in a few hours he had very difficult respiration, and it was only after much effort that the nurse succeeded in replacing the tube. This was experienced several times, but eventually the tube was shortened and he has had no trouble since. When the tube was first taken out, the passage was perfectly clear and nothing could be seen; but, in the course of an hour or so, it would begin to fill up, the mucous membrane of the trachea flapped like a sail that had broken loose before the wind, and the whole mucous membrane bulged toward the centre. In Mr. T.'s case the tubes were gradually shortened until the present one was adopted. Mr. T. goes about his business and his voice is very good within a few feet, and is improving with practice. It was also an interesting point to know that he can smoke as well as he ever did and enjoys it very much.

DISCUSSION.

Dr. HARMON SMITH told of two cases he had recently seen in London presented by Dr. Symonds and Prof. Gluck. He described a new tracheal tube used by Prof. Gluck, by the use of which it was claimed a great improvement in articulation could be obtained, but he said that he himself could not observe that it secured any appreciable increase in the carrying power of the voice or in the articulation. However, the sounds were somewhat louder. Both cases had been operated on several years before. The patient presented by Prof. Gluck could speak articulately and could smoke by the use of the buccal muscles. Another point in the operation of Prof. Gluck was the replacement of the trachea through a button-hole incision below the wound made for the extirpation of the larynx. The patient was fed through a funnel-shaped rubber tube which could be held in the oesophagus for a year at least, without inflammatory reaction.

**A Set of False Teeth Which Had Remained in the Oesophagus
for Several Weeks, with Radiograph of Chest and Neck
Showing Teeth in Position Just Under the Collar Bone.**

Dr. ROBERT C. MYLES said that the patient when laughing had thrown his head back and the teeth fell into the throat. He was examined by several physicians in Cincinnati, and finally by a distinguished surgeon who told him there was nothing in the throat and that if it had been there it had gone into his stomach. Some four weeks later, he came to Dr. Myles complaining of pain in his back and some pain radiating through his chest. With the assurance that there was nothing in the cesophagus the speaker passed a bougie down, but it stopped beneath the upper part of the sternum, striking against something soft and elastic; so the patient was told that it would be better to have a radiograph taken. He replied that two had been taken but there was nothing there. Another one was taken, however, by Dr. Caldwell, of Newark, which was successful in locating the teeth. A whalebone bougie with metal tip located the plate in the position shown in the radiograph. An attempt was made to remove the teeth with the oesophageal forceps; but although they were caught several times, they could not be moved. They were lodged crosswise. Finally an incision was made by Dr. John A. Wyeth, and with some difficulty the teeth were finally gotten out. This was done a week ago, and since then the man swallows perfectly well, but the left recurrent nerve has apparently been injured in some way and his voice is not now so good as it was previous to swallowing the teeth. When the teeth were reached they were found to be covered with granulation tissue.

The speaker said that the only way he could account for the failure of the physicians to find anything was that the man might have swallowed the teeth and vomited them up again.

DISCUSSION.

Dr. LINN EMERSON spoke of the possibility of injuring not only the oesophagus but the aorta also, when the foreign body was a little further down, and told of a case when he was interne in the hospital where a man came in with a history of having swallowed a bone. In attempting to pass a bougie, complete obstruction was encountered, and it was thought best to keep the man under observation pending operation. That was before we had any x-ray apparatus of any value. Two days later, the man while setting up in bed, lurched suddenly forward and a stream of blood spurted from his mouth, and he died in a few minutes. Examination afterward showed that a

broken piece of chicken bone had lodged in the œsophagus at the arch of the aorta and had perforated the œsophagus and aorta.

Dr. EMIL MAYER inquired whether Dr. Myles had attempted an examination with the bronchoscope.

DR. MYLES (replying to Dr. Mayer) said that they did not attempt that, because of the extreme irritability of the patient, and that it was not necessary because after getting the picture everything was determined by measurement. The shape could be seen and they were afraid all the time of a rupture, for it was evident that the end of the hard plate was pushing into the cesophageal wall and they were afraid of its cutting into the mediastinum. It was very firmly fixed.

Several Cases of Submucous Resection of the Septum. Presented by SIDNEY YANKAUER, M.D.

These were a few from a series of about 25 cases, some from private practice, some from Dr. Emil Mayer's clinic at Mount Sinai Hospital, which illustrated a method of performing sub-mucous resection of the septum which has been successful in appropriate cases. They were all cases of extreme deviation of the cartilaginous and bony septum in which there was a deep hollow on the concave side. On the convex side, the deviation came nearly in contact with the lower turbinate and an oblique ridge extended upward and backward, in some of the cases coming into contact with the middle turbinate. In all of the cases the obstruction was extreme and it was impossible to get behind the deviation except with a small probe.

The operation consists of a single vertical or nearly vertical incision made into the mucous membrane on the convex side in such a position that its lower end corresponds to the anterior edge of the nasal floor. The incision is then continued outward on the floor of the nose half way to the ala, and the mucous membrane, perichondrium, periosteum, etc., are separated and reflected outward upon the outer nasal wall, and a speculum is introduced into the incision. A perforation is then made through the cartilage by scraping it away with a sharp spoon. A hook-shaped elevator is then introduced into this perforation and the opposite mucous membrane separated. The cartilage is then removed with a cutting forceps of any description. The separation of the soft parts is continued backwards, and as much of the cartilage and bone is removed as may be necessary. The mucous membrane is then replaced and the nostril is packed.

The advantages of this operation are as follows:—The incision is made far anteriorly and carried outward upon the floor of the nose. When the mucous membrane is reflected, the opening into the septum

corresponds to the opening of the nostril; and when the speculum is introduced, the field of operation is as large as can be obtained through the nostril itself. When the anterior portion of the cartilage has been removed and the opposite mucous membrane separated, each time the patient takes a deep inspiration the two mucous membranes are separated by the inrushing air, the cavity in the septum becomes as large as the two nostrils together, and the cartilage and bone stand out prominently in the middle. This advantage is lost if the horizontal incision is made, so that paradoxical as it may appear the single incision made far anteriorly gives the most room, especially when the deeper parts of the septum are reached. By making this single vertical incision the further benefit results from the fact that there is no retraction of the flap, and the formation of crusts which frequently occur for a long time on the horizontal scar is avoided. There is, of course, less scar formation. Another point to which special attention is directed is the use of the sharp curette. The thickness of the septum is so variable that a knife may cut through the opposite side, but a curette tells by touch when there is no cartilage under it. The opposite mucous membrane is thus protected with a degree of certainty, which is a matter of much importance, as it is at this stage of the operation that a perforation is apt to occur. In none of the cases in which the technique here described has been adhered to has there been any perforation.

DISCUSSION.

Dr. EMIL MAYER said that he had seen all of these cases, who had been patients at his clinic, before, during and after the operation, and hence he was quite conversant with the method of operation. In one case where he had operated in his office a few weeks before, the young man had deviation of the cartilaginous and bony septum, which had been operated upon some years ago by Schmidt, of Frankfort. The lower edge only had been removed by saw or trephine and it was very doubtful whether a perforation could be avoided, for the mucous membrane had cicatrized. Nevertheless the result has been perfect. The method appealed to him more than any other resection method, and he believed that in properly selected cases the results would always prove very gratifying.

Dr. MYLES said that he had been very much interested in the presentation of these cases. The subject had interested him for ten or twelve years, and at the Atlanta meeting of the American Medical Association he had reported a series of cases in which the perpendicular slit had been employed with the removal of the anterior part

of the cartilage. The cases had all behaved well and the results were all that could be desired. The perpendicular slit gave a wide field. He had done a good many of these cases in the last six months with the horizontal and angular flaps, and he found that the angular flap gets in the way, increases the bleeding, interferes seriously with the removal of parts of the bone and cartilage and makes the operation more tedious. He thought that on the whole this incision was very much better than the angular one.

Dr. ABRAHAMS said that these incisions are very practical in some cases, as Dr. Yankauer said, "an ideal incision in appropriate cases," but what was to be done in those cases where this method was not appropriate? There were many such. He differed with Dr. Yankauer on the subject of cutting through the cartilage, and removing it entirely. He always operated on the convex side, avoiding the concave side entirely. In a great many cases, he found it unnecessary to cut through the cartilage and this was especially true in those cases where there was a thickening. In certain cases, he found that with the use of the triangular knife, which he presented before this section, using the sawing movement with the point directed away from the concave side of the septum, the cartilage could be removed without perforation. He had operated on a great many cases making a perpendicular or U-shaped flap; and at first he found that it was hard to keep them out of the field of operation, but with a simple packing of gauze or cotton between the flap and cartilage, holding it up above where the deviation was, and this shaving process he could readily remove it. He had never tried this method which Dr. Yankauer presented, but with the first appropriate case he would give it a thorough trial. He tried never to remove the cartilage in toto, but in some cases it was necessary to do so. The artery of the septum runs about where the incision is made through the soft structures. In order to control hemorrhage and to secure primary union, he packs the nose with a splint made out of soft rubber tissue and sterile gauze. The splint also acts as a support to the septum. It is removed in two or three days without disturbing the wound or leaving any granulation tissue.

Dr. YANKAUER (closing) said that he had had very little difficulty with hemorrhage in any of the cases. He used an injection of cocaine and adrenalin before the operation and found that this effectually controlled all hemorrhage and helped to keep the parts anaesthetized. All the cases on which he had operated in this way had been very marked cases of deviated septum. The method of

shaving, of which Dr. Abrahams spoke, had the advantage of preserving a good part of the cartilage, which was very desirable where it was practicable; but, where the deviation amounts to no more than the thickness of the cartilage nothing can be gained by shaving off a portion of the cartilage. The septum is reduced by removing the cartilage until the edge of the septum which remains is in the median line. When the mucous membrane contracts, it leaves a plane surface. In many of these cases it was necessary to go high up on the septum and vary far back, and in one case the deviation extended through the entire vomer, and it was necessary to remove the entire bone back to the posterior edge of the septum. With each respiration the membranous septum would go to one side, or the other; but after six weeks it contracted, and the result is now very satisfactory.

Frontal Sinus Case, Followed by Improvement in Vision. Presented by DR. FREUDENTHAL.

The case offered no unusual features. The patient had had trouble with his nose since his earliest recollection, his eyesight had been growing worse for a long time, and in the last year, it had become so bad that he could not come to the clinic alone. Dr. Freudenthal had operated on the case four weeks ago. He did not perform the Killian operation but went in first below the eyebrow. He found that the sinus did not reach above the eye brow. In scooping out the sinus the cranial cavity was broken into, but he was not worried by this as there is no danger if the work is done aseptically. The wound was left open for three or four days, and afterward it closed up with no reaction at all. An interesting result was that his eyesight became so much improved that he was able to come over tonight from Brooklyn alone. Dr. Henry Oppenheimer who examined him thinks that his rapid improvement is due to atropine which I instilled, but he only had one drop of atropine before the operation and one drop afterwards, and the improvement is so marked that it can hardly be attributed to that.

The speaker then told of another case on which he had operated two years previously in the hospital. The patient did well for six or nine months, and afterwards returned. The first time the cells had been scraped out and the sinus washed out, and the patient felt better. The same thing happened a few months later, but the last time he did not improve, and still had the headaches which grew very bad towards morning, so that about four o'clock he could hardly stand it. The doctor finally did a typical Killian operation and removed the whole anterior and lower wall of the right frontal sinus.

The operation was accompanied by severe bleeding, but the patient felt all right soon afterward. The next morning the patient complained of being blind in the left eye. The operation had been on the right side, but now ten days after the operation the condition remains the same and he can not see on the left side. The question is what can be the trouble? There does not seem to have been anything wrong in the operation. The sphenoidal sinus was not opened, as the tissues there seemed to be perfectly sound. The case has been examined by two eye specialists. The first thing that one thinks of in such a case is hysteria. There is nothing to be found in the fundus, but it is perhaps too early yet to say anything definite. Another possibility is that there is a fracture near the optic nerve and the condition might have been caused by the *contre coup* through the chiseling. If that be the case it would be a very great drawback to the operation. The patient had been placed upon a soft pillow and it was hoped that in a few weeks it could be determined whether it was a case of hysteria or whether there was some trouble in the eye.

DISCUSSION.

Dr. MEIERHOF inquired what were the first indications of frontal sinus affection.

Dr. FREUDENTHAL replied that there were some retention symptoms. There was discharge and headaches, and pus in the frontal sinus, and the patient could not see. The man was a wreck.

Dr. MEIERHOF said that the influence of the accessory sinuses on the vision was a very interesting subject. Ziem wrote an article in which he said that many cases of diseases of the eye were caused by empyema of the frontal sinus. There are certainly cases in which the vision is lost without any objective evidence, and it is supposed that in some of these cases the influence of pressure acting upon the optic nerve might produce an atrophy without any evidence of disease such as choked disc. He did not think that the first case which Dr. Freudenthal had presented was a fair one to show as evidence of an accessory sinus causing diminution of vision, inasmuch as these cases of parenchymatous keratitis sometimes run along for a while and get well without treatment, and he did not think that such a case should be presented as an instance showing marked improvement after operation. For this purpose only such cases should be shown as presented involvement of the interior of the eye.

Dr. BERENS inquired whether there was any evidence of sphenoid disease in the second case, and upon receiving a reply in the negative, said that hysteria could not be excluded.

Dr. QUINLAN said that some years ago Dr. Ziem reported a case where immediately after application of the galvano cautery the patient became blind and never afterward recovered his vision. If a simple cauterization of the turbinal would cause loss of vision, we could see how a trauma might involve the bony structure and set up certain inflammatory conditions within the cranial cavity. Dr. Lennox Brown and others have reported similar cases, and in my own service in the Manhattan Eye and Ear Hospital some years ago a woman developed a basilar meningitis following cauterization of middle turbinate, which at that time aroused considerable discussion here and elsewhere. The woman had been treated before and with the same medication; but this time it resulted in an inflammation and she died as the result. The doctor thought it was always wise not to consider these cavities too much. There should be no occasion for timidity; for if the dura were penetrated no harm could happen if absolute asepsis were maintained, any more than if some of the other cavities were entered. It was the uncleanliness of the operator frequently that gave the bad results.

Dr. FREUDENTHAL (closing) said that he would report the second patient again next month. In regard to the first, he did not quite understand the point Dr. Meierhof had made. The patient had not been brought as an evidence of any particular condition, but because of several conditions which were peculiar to him and which he thought would interest others also. He had reported Dr. Oppenheimer's opinion of the case.

Case of Syphilitic Affection of the Epiglottis. By DR. J. S. WATERMAN.

This patient, a young colored woman presented herself February 20th with a history of having had sore throat for two weeks. The examination showed the epiglottis to be a large infiltrated mass. No further history could be obtained from her, but her husband acknowledged having had syphilis two years before. She was placed upon mixed treatment, and responded almost immediately. She stayed away for a month, and then returned. The epiglottis is now about one-third or a half as large as when treatment was begun.

DISCUSSION.

Dr. LEDERMAN told of a case of a woman who had been referred to him by a dentist on account of pain in her teeth and mouth, which was not traceable to any disease of the teeth. Upon examining her throat nothing was seen in the pharynx, but with the laryngoscope

an infiltrated mass was found at the base of the tongue on the right side involving the epiglottis, with a necrotic area through which a probe could be passed for an inch. The woman admitted specific trouble. The gumma had broken down. She improved rapidly under large doses of bichloride of mercury given subcutaneously.

Eucaine Lactate as an Anaesthetic for Operations on the Nose and Throat. By T. J. HARRIS, M.D. (*See page 512*).

DISCUSSION.

Dr. WILSON said that he wished to add his testimony to the efficacy of Eucaine Lactate. Dr. Harris had called his attention to it about a month previously and since then he had used it freely. He did not think it would ever take the place of cocaine, as there were certain operations in which cocaine had marked advantages. The Eucaine Lactate had its places, however, especially in the larynx. He had used it a great deal in introducing a cannula into the trachea, and it produced none of the disagreeable choking effects following the use of cocaine. In his own practice, however, its main advantage had been obtained in treating the eye. It does not dilate the pupil but gives a marked anaesthesia of the cornea. He was not afraid of cocaine and had used it extensively. He had found it very beneficial in treating asthma, injecting it into the arm, beginning with a $\frac{1}{4}$ grain and running up as high as 4 grains. Almost any case of bronchial asthma could be checked at once by using cocaine in this way.

A Short Paper on Instruments and Their Use in Intranasal Operations on All the Accessory Sinuses, with Special Reference to a New Mallet Chisel that Cuts from the Vital Parts with Rotatory and Punch Principles. By ROBERT C. MYLES, M.D.

Before reading the paper Dr. Myles demonstrated the use of the instruments.

Dr. EMIL MAYER said that the Section was certainly indebted to Dr. Myles for the presentation of these instruments, and for giving the results of his work with them. He did not doubt many of the members would try them and report results.

Dr. BERENS said that he also felt that the Section was indebted to Dr. Myles for the exhibition and demonstration of these instruments, and that he himself would certainly give them a trial. He would like, however, for the doctor to be a little more explicit in

his statement about opening up the accessory sinuses and making as free an opening as the topographical anatomy would allow.

Dr. YANKAUER said that the instruments interested him very much from the mechanical standpoint, and he thought they would afford a better method of entering the antrum from the middle or lower meatus. He had never attempted to enlarge the passage to the frontal sinus from the interior of the nose but had opened many antra in that way and believed that was the proper way to do it.

Dr. MYLES said that in making the first opening into the antrum he usually used the small chisel that cuts forward, but that a very easy way in some cases was to use the electric trephine, and then enter the hole with the biting forceps and enlarge it. In certain cases he found this a better method in conjunction with the use of the chisel.

Dr. ABRAHAMS inquired whether Dr. Myles performed a partial turbinectomy before entering the antrum.

Dr. HURD inquired how large a hole Dr. Myles made in the frontal sinus.

Dr. MYLES (closing) said that he had tried to limit his paper to the mechanical question, as he thought that the essential feature, and that each operator could work out the application as seemed desirable. Replying to Dr. Berens, he said that his remarks were confined to those parts of the sinus wall that were situated between the sinuses and the nasal fossæ. He removed as much of that as possible without too much injury to their physiological function in serious cases, his object being to maintain a permanent opening from the nose to the sinuses. He had found that small openings had a tendency to close up. Care should be used in cutting too near the arteries, and the floor of the nose should not be torn up too much, for there was danger of creating certain neuroses. He removed all of the frontal sinus floor that he could and very often he had chiseled away part of the nasal process of the superior maxillary bone, which is very thick and firm, and when there is a low cribiform plate the internal route is much safer than the external when it is necessary to remove a part of the anterior ethmoidal cells.

In regard to the sphenoidal cells, it was very easy to remove the anterior wall of the sphenoidal cells as also the wall of the posterior ethmoidal cells, and these chisels hook on and pull it out and give a

very satisfactory result. He had often used a curette for this, but had been afraid of setting up some form of meningeal trouble. With these instruments he had operated upon a great many cases and had never had a single death. Dr. Logan Turner reports a great many deaths in cases of different operators, and says that he considers the external operation a major one on account of the large death rate. If the floor of the frontal sinus is cut away the drainage naturally flows downward.

Replying to Dr. Hurd's question about the frontal sinus, he said that he supposed others found as he did, that the region about the floor of each frontal sinus was different and that the size of the opening was regulated by the topographical anatomy. The chief thing desired was to secure free drainage and free ventilation.

An of Unusually Large Post-Nasal Polypus. By DR. WILLIAM F. CARTER. (Published in full in this number of THE LARYNGOSCOPE, page 454).

DISCUSSION.

Dr. EMIL MAYER said that in connection with the case just presented he would like to mention briefly the case of a young man who had presented himself at his clinic a short time previously, with a post nasal tumor of this character, forming a large egg-shaped mass, but giving no symptoms referable to his pharynx, though the growth hung low down between the tonsils. He complained of his nose, and had been treated by a specialist for nasal polypi, but no diagnosis had been made of anything in his pharynx. The polyp was removed with a wire snare guided to the base of the peduncle through the mouth and was later diagnosed as a myxomatous polyp. Some time ago, he had seen another similar case of a large polyp existing in the pharynx without the knowledge of the patient. Referring to the various devices which Dr. Carter had mentioned for removing these growths, Dr. Mayer told of a man who had a tumor of this kind existing in the naso pharynx, and after various attempts to remove it had failed, the speaker put his finger in to locate the growth, found that it had a very small peduncle, and was able to grasp it and twist it off.

Dr. CARTER said that he would be very glad of any suggestions as to methods by which such tumors could be removed without involving the necessity of the radical operation suggested by Annandale, for he would have found himself in a very trying position if he had not been able to introduce the adenoid forceps. This method

he does not recommend except in an emergency as in the present case when all other conservative methods known to him had been tried without success.

Dr. WATERMAN told of a similar tumor he had seen some ten years ago in a girl of fifteen, who had a large polypoid mass hanging from the naso-pharynx, the pedicle being attached to the left posterior choana, which was removed with adenoid forceps.

Set of Tonsil Scissors with Pressure Created Near the Distal End.

Dr. R. C. MYLES presented these and described the manner of using them.

Foreign Bodies in the Bronchial Tubes—LORMOYEZ AND JEAN GUISEZ—*Presse Méd.*, Dec. 29, 1903.

The first was a case of a young woman who while coughing inhaled a plum stone into the air passages. In spite of a large tracheotomy, it was impossible to remove the foreign body, and the patient died of broncho-pneumonia.

The second case was a carpet layer who had his mouth filled with nails, and inhaled one of the nails. An effort was made to extract the nail by the natural passages and directly under control of the sight, by means of superior bronchoscopy. After several fruitless attempts, it was decided to practice tracheotomy in order to make use of the inferior bronchoscopy. On the first attempt, it was relatively easy to introduce the tube as far as the ramification of the third order where the nail was located. An electro-magnet was now introduced, and on the first attempt, the nail was attracted to the magnet. The subsequent history of the patient was excellent, and he was soon restored to health.

The author calls attention, as the results of these considerations, to the importance of the discovery of the bronchoscopy by Killian, from both a diagnostic and surgical standpoint. SCHEPPEGRELL.

CHICAGO LARYNGOLOGICAL AND OTOLOGICAL SOCIETY.

A Regular Meeting, April 4, 1905.

W.M. L. BALLINGER, M.D., President.

Cases of Tracheal and Laryngeal Stenoses Following Intubation.

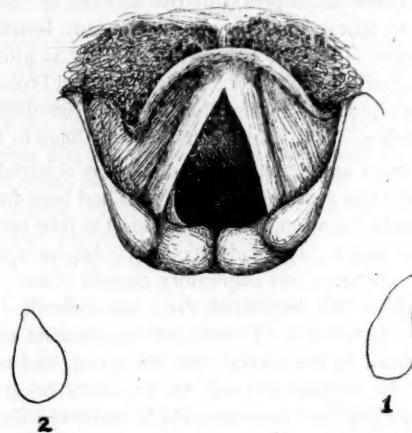
Dr. JOHN EDWIN RHODES: Miss L. F. is 16 years of age, of Jewish parentage; height 4 feet, 11½ inches, and weight 81½ pounds. When she was 6 years of age, she was attacked with laryngeal diphtheria, for which intubation became necessary to save her life. This tube was worn for about two weeks, having been removed accidentally once, by the thread which had been left attached, and replaced during that time. The information with regard to this illness is rather indefinite; but patient's mother says she had been croupy and somewhat hoarse for some time preceding this attack. Immediately following the final removal of the tube she began to speak in a whisper only and found difficulty in breathing, which conditions have continued ever since.

Since that time she has been in fairly good health, save for an attack of acute appendicitis two years ago, from which she recovered without operation. She has occasionally had sore throat. Another symptom has been a constant cough, which is affected by weather conditions, and is much worse during the winter. The sputum is thick and yellowish, and very profuse. An examination of this sputum shows that it contains no tubercle bacilli; but pus corpuscles, streptococci and staphylococci are abundant. Her complaint now is chiefly of this cough. Her breathing is somewhat stridulous, there being both a noisy and labored inspiration and expiration, showing a permanent and fixed obstruction to the passage of the air current. She usually speaks in a whisper, and this, with the laryngeal picture when she thus speaks, has led to a diagnosis of paralysis of the vocal cords by some physicians. On careful observation and inquiry, however, I find that she can phonate aloud in a high pitched voice, and clearly when she attempts to do so with a full chest, and can converse aloud provided she occasionally takes a deep inspiration. She can call loudly also. The reason she has given for using the whisper instead of the high pitched, forcible loud voice is that her chest soon becomes tired when speaking aloud.

You will observe that she speaks both during expiration and inspiration, a method compensating for the poverty of air supply in the lungs, and which I have noted in other cases of stenotic conditions of the trachea and larynx.

Her general health is fair, and she has attended school regularly, going through the seventh grade.

She has been pale, much more so for some years after her illness than at the present time. Her finger nails are a little bluish, but the mucous membranes are bright red. Her blood count is white corpuscles, 9,400; red corpuscles, 5,600,000. Her appetite is good and all functions fairly normal. Her pulse is 96, full, regular and soft; temperature 99.



Examination of the chest shows a noticeable prominence of the lower segment of the manubrium sterni, but no other abnormal signs, save a somewhat labored breathing.

The nasal cavities are free, the fauces normal. On examination of the larynx the vocal cords on whispered phonation remain abducted, but after taking a deep inspiration they adduct perfectly on phonating in high pitched voice. The anterior ends of the cords are broad and agglutinated at their edges, forming a broad band at the anterior commissure, which is well shown in a drawing which was sketched for me from life by Dr. Freer and drawn by Dr. Burkholder. Below the vocal cords at a distance of possibly 5mm. on the left side of the trachea, is a broad cicatricial band, stretching

across the lumen of the subglottic area, with a small opening in its right segment, through which the air passes. The arytenoids are freely movable. This cicatricial band not only obstructs the lumen, but has contracted the walls of the subglottic and tracheal area as can easily be demonstrated by external palpation. These drawings (horizontal segments) are of the thyroid area, with a flattening over the left side of the thyroid (No. 1), and over the right side of the trachea below (No. 2).

I had hoped that a careful study of the case might show the advisability of some operative procedure, but in view of the fact that there is not only an obstruction of the lumen by the cicatrization but a marked narrowing and contraction of the tracheal wall, I am convinced nothing can be done to improve her breathing. Efforts were made by a surgeon for a period of two months by dilatation three times weekly to relieve the stenosis, without any benefit. She also tried vocalization faithfully, but speaking aloud is always difficult. The chronic catarrhal condition of the tracheal and bronchial mucous membranes can probably be much relieved by inhalations and appropriate remedies. With that the patient will have to be satisfied.

About two years ago a young lady of 18 was referred to me, who had diphtheria when four years of age, and had been intubated, and had worn the tube for a long time, coughing the tube out and having it replaced nine times. This lady spoke in a hoarse voice, speaking both with the expiratory and inspiratory current of air. Her breathing was stridulous, but inspiration only was difficult. She was in robust health. In her case, I found on examination of the larynx the left cord fixed in the central line, thickened, and on phonation overlapped by the ventricular band, the arytenoid being quite freely movable. The right cord was movable in restricted limits, but was also overlapped by the vocal band on phonation. The opening for the passage of the air current was between the left cord, fixed in the median line, and the right cord in the cadaveric position. The larynx was somewhat distorted by the cicatricial tissue. At the time I saw her she had an acute laryngitis which cleared up rapidly under treatment. No operative measures could be advised.

Some ten years ago I saw another case with Dr. Ingals, in which an intubation tube was worn for a number of years. It could not be left out for any length of time. It was necessary to remove the tube about once a month to clean it. During all the period it was worn it was not left out for more than five or ten minutes at a time, breathing then becoming difficult; and on several occasions, it was necessary to replace it quickly in order to prevent the child from

choking to death. I remember one time being summoned in great haste to the house, and when I got there found the patient deeply cyanosed and semi-conscious, showing imperfect aeration of the blood and breathing with the greatest difficulty. I removed the tube quickly without placing the gag, and found it has been almost completely occluded by the dry mucus in it. Finally it became necessary in this case to do a tracheotomy, as the wearing of the intubation tube was such a menace to the child, from the difficulty of getting a competent physician in time to remove it when it became obstructed by the mucus. That patient is still living but now wearing a tracheotomy tube. During the last year, attempts were made to widen the opening for breathing through the trachea and larynx, but without success.

DISCUSSION OF DR. RHODES' CASES.

Dr. OTTO J. STEIN: In reference to Dr. Rhodes' cases, I was wondering whether the employment of thiosinamin would not be beneficial, particularly in those cases where there are cicatricial contractions of the trachea. I did not examine the case and I do not know whether Dr. Rhodes used that remedy or not. It is used in keloids, and other cicatricial deposits about the body, particularly in middle ear disease, and it suggested itself to me that it might possibly be used in this region in conjunction with mechanical dilatation of the stricture. It might be of some use in softening the stricture.

Dr. P. J. H. FARRELL: In examining these throat cases I find one great advantage in using the mirror is to rub it on the mucous membrane of the mouth instead of using water. In this way one can get a longer exposure and a very much clearer view.

Dr. RHODES (closing the discussion): Dilatation was tried very faithfully in this case for a period of three months without any benefit whatever.

Thiosinamin has not been tried, although it might be worth while to try it in order to soften the stenosed cicatricial parts. There is a contraction of the wall of the trachea, which makes it impossible to get a free breathing space by any operative procedure. Breathing is freer now than it has been, but dyspnea is not a symptom of which the patient complains particularly.

Two Cases: Empyema of the Frontal Sinus, and Bone Cyst of Left Middle Turbinate.

Dr. J. HOLINGER: First patient: Fireman, 47 years old, caught cold after cleaning a very hot furnace. Severe headaches started a week later. He came to the Alexian Brother's Hospital another

week later. The findings were swelling of the left side of the forehead and of the left upper and lower eyelids. Fluctuation could be felt over the medial end of the eyebrow and a defect in the bone underneath of the size of a bean. In the nose I could not detect any pus nor could I pass a probe into the frontal sinus. A radical operation after Killian was made and now four weeks after operation you can feel that the sinus is filled with good callus. No communication with the maxillary sinus or with the nose could be found at the operation. This fact and the large destruction of bone after only two weeks standing of the empyema are the main reasons that this case is presented here.

Second patient: Carpenter, 47 years old, had headache on his left side and sleeplessness for six weeks. The left nostril was closed. A hard tumor of the size of a man's thumb filled it completely. The snare slipped and it had therefore to be cut out with a bone forceps. The tumor was an enormous bone cyst filled with polyps, after the removal of which it was found that it was the middle turbinate. Bone-cells in the anterior and of the middle turbinate are frequent, but cysts of this size are rare. Furthermore, the origin of this cyst was inflammatory, which is unusual, as Kikuchi, who has done the best work in this line, maintains that they were usually congenital. The nose is now very wide because the lower turbinate is squeezed against the wall. The opening of the Highmore's antrum can plainly be seen.

Some Medical Terms Commonly Misused. By GEO. E. SHAMBAUGH, M.D.

The correct use of scientific terms is of first importance in medical writing where a definite concise presentation is paramount. In spite of this fact, misused terms find their way into common usage. These errors are usually confined to the class of writing that forms the bulk of matter in our Medical Journals, yet some of them do occur in articles aspiring to be scientific, and in text books.

The confusion in the use of anatomical terms that had crept into our vocabulary was finally adjusted by the international convention of anatomists called together by His which met in Basel in 1895. At this time the entire anatomical nomenclature was revised. Terms which conveyed a mistaken conception of a part were dropped, and new terms devised. Where the name of a man had been applied to a part this was dropped and an appropriate term applied. It is scarcely ten years since the work of this convention was completed, and to-day the nomen-

clature of His has been adopted in all writing of a really scientific character, and is being taught in our first class medical schools. The older terms which had been in common usage are being replaced even in writing in our second class medical journals.

It is not the use of the old nomenclature that is referred to in the title of this paper, but to the palpable misuse of certain terms.

In the ear for example we find the term processus longus often used when reference is made to the handle of the hammer, whereas the processus longus of the malleus is the processus anterior running forward from the neck of the malleus and buried in the anterior fold of the membrana tympani. The term ear drum is often used when the membrana tympani or drum membrane is referred to. The drum the ear of course is the common name for the cavum tympani. More common, however, than the above errors is the misuse of the term middle ear. This is often used as synonymous with cavum tympani, whereas middle ear is a much more comprehensive term, and includes the tuba auditiva, and the mastoid cells as well as the tympanic cavity.

Another term in connection with the middle ear that is commonly misused is the term applied to the antrum. We see this commonly referred to as the mastoid antrum, and frequently described as a large mastoid cell. As a matter of fact the antrum is not a mastoid cell, and while it is located at the base of the mastoid process it is really a part of the tympanic cavity as its correct name antrum tympanicum implies. The term mastoid antrum implies that it is a mastoid cell, and conveys a misconception of its true character which leads to a great deal of confusion in regard to the pathology of these parts. It was Leidy, one of our own great anatomists, who first pointed out the true character of the antrum, and showed that developmentally as well as in its histological structure this cavity was really part of the tympanum just as the attic and the aditus are, and not in any sense a mastoid cell. It is only with this conception of the antrum that we can get a just appreciation of the significance of infection occurring in the antrum in the presence of a purulent otitis media and the relation of mastoiditis to antrum disease.

In the nose, the confusion arising from the misuse of anatomical terms has been chiefly in connection with structures in the middle meatus. These parts are, *in vivo*, always more or

less obscured from view and where one has not studied their relations on the cadaver it is very difficult to get a clear idea in regard to them. The terms that are most often misunderstood are the infundibulum and the hiatus semilunaris and the relations of these to the openings into the frontal sinus and the maxillary sinus. It is not uncommon to see the infundibulum referred to as the anterior end of the hiatus semilunaris which leads into the frontal sinus. In reality of course, the infundibulum and the hiatus semilunaris are coextensive lying in the middle meatus, placed between the bulla above and the unciform process below. This hiatus semilunaris being but the slit-like opening leading into to furrow several mm. deep which is called the infundibulum. The anterior end of the infundibulum in the typical relation of the parts opens into the sinus frontalis, and in its posterior end is the ostium maxillare leading into the maxillary sinus. Pus from either the frontal or maxillary sinus empties first into the infundibulum, and from this through the hiatus semilunaris into the middle meatus of the nose.

There is another incorrect term, not an anatomical one, that has unfortunately got into common usage in the literature of our specialty. It is doubly unfortunate because in it the attempt has been made to use a scientific Latin term, the word adopted has not been correctly derived, and to a foreigner who knows and uses the correct term our mistake must appear very ludicrous. Such errors are deplorable because they must tend to justify the cheap estimate which particularly the Germans have often put on work done in this country. I refer to the term signifying an inflammation in a sinus. Some single term signifying this condition seems desirable. In the German literature a correctly formed term has long been in use. In this country unfortunately a wrongly formed word has been quite generally adopted. To those who have no appreciation for language this may mean little, but to those who have this appreciation such a mistake is something more than ludicrous, it is deplorable. The term signifying an inflammation is derived by adding to the noun stem the suffix *itis*. When for example we wish to express inflammation in the iris we add to the noun stem *ir* the suffix *itis* which gives us the term *iritis*. In the word *sinus* the noun stem is *sinu* to which when the suffix *itis* is added we have the term *sinuitis*. This is the term in common usage in German literature. Unfortunately in this country a misformed word *sinusitis* has been commonly used. To a

foreigner who has been accustomed to the correct term the use of sinusitis must appear as laughable as would the use of "irisitis" or "appendixitis."

DISCUSSION.

Dr. NORVAL H. PIEROE was asked to open the discussion. He said: There was one point that attracted my attention especially, and that is when we speak of the middle ear the picture presented to the mind is very apt to be nothing more than the cavum tympani, and undoubtedly this has been to blame for a number of misconceptions in the pathology of acute inflammatory conditions, as the doctor has pointed out. In comparison with the pneumatic spaces in connection with the tympanic cavity, in the acute inflammations, the cavum tympani is of secondary importance; and I believe that this should be insisted upon until the general practitioner who believes that in an acute inflammation, because the auditory function is most obviously affected the cavum tympani is the most important, comes to realize that in all these inflammations the juxtaposition of the great blood vessels and the lining membranes of the brain render the pneumatic cells of very much greater significance than the cavum tympani.

I have noticed that the word sinusitis is used extensively in American literature; it has been used in German literature, also, and I believe Chiari has drawn attention to the incorrectness of its etymological construction. It is really a hybrid term—"sinusitis," or "sinuitis"—a wedding of a Latin root "sinu(s)" to a Greek suffix "itis," and that is not regarded as elegant by philologists. "Anthraxis" has been suggested.

Dr. WILLIAM L. BALLINGER: Is it proper to say middle turbinal or middle turbinated body?

Dr. SHAMBAUGH: The terms turbinated, turbinal and turbinate bodies are all used when referring to these structures in the nose. The term turbinated body is perhaps the one most often used, but as far as I know the terms turbinal and turbinate are equally correct.

Dr. JOHN EDWIN RHODES: There is another word that has seemed to me unnecessary that has come into use recently, and that is the substitution of the word tonsillectomy for tonsillotomy. It seems to me there is a distinction there without any difference.

Dr. BALLINGER: On what ground?

Dr. RHODES: A tonsillotomy is practically the same as a tonsillectomy.

Dr. BALLINGER: A tonsillotomy is where you cut through the tonsils removing a portion.

Dr. RHODES: Tonsillotomy has always been used for extirpation of tonsils until within recent times, and I do not see why it is not a proper term. In Gould's dictionary the term tonsillotomy is defined as "ablation of the tonsils."

Dr. BALLINGER: When you say tonsillotomy, you mean that you cut through the tonsil and remove a portion of it, whereas, if you take out the tonsil in its entirety it is a tonsillectomy. I have taken out tonsils in their entirety, leaving the capsule undisturbed, and I call that a tonsillectomy. If I should simply cut through the tonsillar tissue, I should call it a tonsillotomy. That is my idea of the correct use of the two words.

Dr. RHODES: That is hardly a correct interpretation to my mind, for the word tonsillotomy covers the entire field. The word is derived from the Latin word tonsilla, a tonsil, and the Greek word tome, "a cutting" (not "to cut through"), the term, I take it, referring simply to the method of operating, i. e. by cutting, and has nothing suggestive of whether it is a partial or a complete extirpation. I object to the use of the two words simply because I think one term covers the whole field.

The Present Status of the Question of Rarefaction of the Labyrinthine Capsule (Oto-Sclerosis).

Dr. NORVAL H. PIERCE: After stating that the nomenclature of the disease process under consideration was not altogether satisfactory, the author stated that its development might be historically divided into three phases. The first phase began with the recognition of stapes ankylosis as a cause of deafness. The second stage was inaugurated by the discovery that the disease is a primary circumscribed process in the bony labyrinthine capsule, disassociated from demonstrable changes within the tympanic cavity. The third stage is that in which occurred further developments in the micro-pathology and the formulation of diagnostic methods.

That deafness may result from fixation of the stapes in the fenestra ovalis was recognized by Valsalva, 1724; by Morgagni, 1761, and by Meckel, 1777. From this time to the middle of the last century no further development occurred. In 1849, Toynbee published his pathologico-anatomical researches in diseases of the ear, based on 1,149 preparations. Among these he

found 126 specimens of ankylosis of the stapes. The value of these specimens was greatly reduced by the fact that they were accompanied by very scant clinical observations, but the publication gave a fresh impetus to the subject, and in the following thirty years the subject was enriched by the appearance of much research work by von Erhard, Kramer, Voltolini, von Tröltzsch, Politzer, and many others. The tardy development of knowledge of this disease was due to two factors:

1. The difficulty of obtaining post-mortem material that had been sufficiently observed during life.

2. The lack of correct diagnostic measures.

The process which causes synostosis of the stapes is a harmless disease as regards life. The temporal bones of those so afflicted can be obtained only when death results from some intercurrent disease or from violence. As regards the second point, it is sufficient to mention that as late as 1870 Schwartz believed that the only certain means of ascertaining the fixation of the stapes was by directly testing its mobility with a probe introduced through an artificial opening made in the tympanic membrane.

The second stage dates from 1861, when Moos published the results of his examinations of a case in which, besides entire absence of change in the tympanic mucosa, he found stapes ankylosis, to which he ascribed as cause a primary osteitic process occurring in the bone itself. In a second case he ascribed the ankylosis to a circumscribed periostitis occurring in the labyrinth capsule itself. This publication was quickly followed by others, all agreeing in the main as to the pathological findings, but differing as to the exact histological origin of the process, that is, whether the pathological change originated in periosteum, bone or cartilage.

The third phase in the history of the development of our knowledge of the disease began with Bezold, who, in 1885, reported the first case of stapes ankylosis, in which the correctness of the clinical diagnosis was verified by the results of a microscopic post-mortem examination, and manometric tests of stapes mobility; while he at the same time laid the foundation of functional tests as an aid to diagnosis of the physician. Soon after this the microscopic examination of specimens of the temporal bone added greatly to the advancement of the subject. Politzer was the first to illustrate the microscopic findings of stapes ankylosis in his textbook published in 1887. To L. Katz be-

longs the honor of publishing the first case in which stapes fixation was diagnosticated during life by the results of functional tests, and which was microscopically examined after death. Since Katz' publication in 1890, there have been less than 40 cases reported, in all of which the diagnosis made during life has been confirmed by dissection.

The principal factors of interest in the pathology of osteoporosis are grouped about the changes which occur about the foot-plate of the stapes and those in the bony walls of the labyrinthine capsule, the cochlea, semicircular canal, and vestibulum.

The author called attention to the fact that fixation of the stapes may occur in conditions other than osteoporosis.

He discussed the etiology, saying that the cause of oto-sclerosis is still to be found.

The disease affects women more frequently than men.

Oto-sclerosis is a disease of middle age.

Attention was directed to functional tests and diagnosis. The diagnosis of pure, uncomplicated oto-sclerosis was not difficult.

As to the value of the Gelli test, it is variously estimated by otologists. The speaker has used it for a number of years, and finds that it is of great service in controlling the Rinné test, especially in cases of oto-sclerosis. He agrees in the main with Gelli's deductions:

1. A negative Rinné combined with a negative Gelli permits the exclusion of nerve involvement.
2. A positive Rinné and a positive Gelli indicate nerve deafness.
3. A positive Rinné and a negative Gelli are strong presumptive evidence of stapes fixation and nerve involvement.

DISCUSSION.

Dr. GEORGE E. SHAMBAUGH: I think we are fortunate in having had the privilege of listening to a paper that brings up this subject so thoroughly and so accurately.

The question of diagnosis of oto-sclerosis is one which we have to meet daily. We find these cases where there can be no question in regard to the diagnosis. Where we have the drum membrane perfectly clear and the tube widely open, with the typical tuning fork test there can be very little question as to the diagnosis. On the other hand, we meet cases in which the condition of oto-sclerosis has been preceded in previous years by a chronic perhaps suppurative middle ear process, which renders the diagnosis more difficult, be-

cause here we get the same tuning fork tests as in oto-sclerosis. The lower tone limit is destroyed to a certain extent, with decided negative Rinné, and a prolongation of bone conduction. There is no reason why a chronic suppurative process may not be followed in after years by an oto-sclerosis process, the two not being connected at all. The same is true of middle ear catarrh. A child may be suffering from adenoids and may have had tubal catarrh in early childhood. This may disappear leaving marks on the drum membrane of past catarrhal disease, from which the child recovered. When such a case develops oto-sclerosis it is not easy to ascertain whether the symptoms are caused by the alterations produced by the catarrh or are the result of oto-sclerosis. The question of diagnosis here is difficult if not quite impossible.

In regard to the definition of oto-sclerosis, I do not know that I understood the speaker correctly, but I gathered that in his definition of the disease was included the condition that there had been no previous disease. This is like the definition often given of Ménière's disease when it is stated that it is the result of certain definite symptoms, and occurring in a case where there has been no previous ear disease. Because Ménière, in his description of the disease that goes by his name, described a case where he made a post-mortem examination and because this case had suffered from no previous ear trouble is hardly a reason why one should exclude from the definition of Ménière's disease those cases where there has been ear trouble previous to the development of the conditions which we recognize under the name of Ménière's disease. There is of course no reason why a person who has suffered or is suffering from some other ear disease as for example chronic suppurative or chronic catarrhal otitis media should not develop oto-sclerosis, the two perhaps being quite independent of each other. The diagnosis of oto-sclerosis in such cases will be quite difficult, and often impossible except by post-mortem findings.

The fact that the foot plate is often involved in the bony lesion of the labyrinthine capsule in oto-sclerosis suggests the long controversy running through the literature in regard to the origin of this part of the stapes. It has been pretty generally conceded that the foot plate of the stapes has quite a different origin from the remainder of the chain of ossicles, and that it is derived from the capsule of the labyrinth from which it becomes detached.

Oto-sclerosis, having its origin in the capsule of the labyrinth, has directed attention to this interesting structure. If one looks at a cross section of the temporal bone, he will see at a glance each point

where the labyrinth of the ear has been cut through from the ivory-like character of the bone immediately surrounding the labyrinth. This is the so-called capsule of the labyrinth. It is not easy in the adult to determine the exact line of division between the capsule and the surrounding spongy portion of the temporal bone for the two pass imperceptibly into each other. In the fetus, however, and the new born, the labyrinth with its capsule can be shelled out entirely free from the temporal bone. In the earlier embryo before ossification has taken place the labyrinth with its cartilaginous capsule can be shelled out in the same way.

A point of interest in connection with the capsule of the labyrinth is the question of its blood supply, and especially whether there are communications existing between the blood vessels of the capsule and those which supply the membranous structure of the labyrinth. Politzer on the basis of some investigation of his own, believed that he could demonstrate communication between the blood vessels in the labyrinth and those in the part of the capsule forming the promontory; and, since the blood vessels of the mucosa of the tympanum communicate freely with the blood vessels in the osseous structure forming the promontory, Politzer believed he saw a direct route for extension of disease from the cavum tympani to the labyrinth.

The observation of Politzer has not been substantiated by subsequent researches along this line. I have for several years been working on the subject of the blood supply of the capsule of the labyrinth, and I have found a method by which the blood vessels of the capsule can be readily studied and which I believe settles definitely many of the points in dispute.

Dr. J. HOLINGER: The latest work on oto-sclerosis is Denker's which as I see is well known to Dr. Pierce. Only a limited number of cases have been published in which the post-mortem examination verified the diagnosis made during lifetime, a much larger number has not been published. Siebenmann says he has spoken on this subject and leaves the floor to the others. Denker approves of every word.

There are two different pathological processes which may lead to immobility of the stirrup in the oval window. First, Siebenmann's spongifying process without inflammation originating in the bony capsule of the labyrinth; and, second, the inflammatory process with periostitis which develops in old suppurations. The adhesive processes of the mallet and incus, one reads so much about in the text books, have very little bearing on the hearing. What Dr. Shambaugh

and what many text books call chronic catarrhal otitis media are either suppuration of the middle ear and if they lead to scars with stopping of the suppuration are called residues, or they are occlusions of the Eustachian tube. Small amounts of viscid mucous may be found in the middle ear of these patients but that is not pus and the process can not be called suppuration because the mucous membrane is not inflamed. The mucus is a secretion ex vacuo and disappears as soon as the tube is opened. The publications of Bezold on these matters date more than 18 years back. Many modern text books do not take any notice of these experiments and therefore are not up to date. The practical value of all this has been often demonstrated to me when patients who were elsewhere treated with electric massage, etc., for weeks and months have been cured after a few applications of the catheter.

Dr. PIERCE (closing the discussion): In regard to Dr. Stein's question, I will say that in the body of my paper I gave statistics as to bilateral occurrence, quoting from Bezold. He gives 88 per cent of cases in which both ears are affected. My personal experience would lead me to believe that in much less than 10%, only one ear is affected. A good many cases of oto-sclerosis that are supposed to be bilateral prove to be unilateral, after careful examination. A great many of the patients who come to us say that they cannot hear very well in one ear. It may be the right or the left ear, and when we examine them carefully we find the other ear is affected as well, not as markedly as the one of which the patient complains, still, the defects in the lower tones, and decreased distance for whisper evidence its involvement. Bezold and Siebermann strive to exclude the idea of inflammations other than suppurative in the middle ear. Siebermann speaks constantly of "the reactions in tubal catarrh." This is somewhat misleading to our minds, because we are accustomed to divide the secretory processes in the middle ear into several categories. Bezold speaks of tubal catarrh as we speak of catarrhal inflammations of the middle ear. It makes very little difference, practically, whether we regard those conditions which we have spoken of as catarrhal as being limited to the middle ear, or whether they are simply the result and extension of a condition that had its origin in the Eustachian tube. That we can have fixation of the stapes in the fenestra ovalis in secretory (catarrhal) types of middle ear (tubal) inflammations due to organization of the products of such inflammations about the foot plate there can be no doubt, and this fixation, if it is complete, gives similar reactions to those of fixation of the stapes as the result of oto-sclerosis. We have prolonged bone

conduction, positive Rinné, and elevation of the lower tone limit; but the other factors, the presence of retraction of the drum-head, closure of the Eustachian tube, the presence of fluid perhaps in the middle ear, symptoms that are characteristic of these inflammations, are present in the catarrhal type, whereas in oto-sclerosis we have a patent tube, and normal or nearly normal tympanic membrane. Even if we have tubal disease (or a catarrhal otitis media) and oto-sclerosis, the symptom-complex of oto-sclerosis will so far overshadow the symptoms of catarrhal inflammation that we very rarely remain long in doubt. For instance, if we have the symptom-complex of Bezold, and on catheterization or inflation find there is considerable increase in audition, our prognosis should be very guarded, because these cases frequently go on and follow the usual course of cases of oto-sclerosis. We should not be misled, therefore, in those cases that give the reaction of fixation of the stapes, by an increase of audition on inflation. In cases where the bone conduction is decreased and with shortened or negative Rinné, and where there is indubitable evidence of tubal catarrh (or of a catarrhal otitis media), we may have the greatest difficulty in arriving at an exact diagnosis, and it is only by observing these cases for a considerable length of time that we arrive at a correct diagnosis.

The Symptoms, Complications and Sequelæ of Adenoid Vegetations—JOH. FRED. FISCHER—*Arch. f. Ohrenh.*, Leipzig, Aug. 26, 1904.

The author describes the symptoms and complications of adenoids under the following headings:

1. Symptoms resulting from obstruction of the naso-pharynx; nasal obstruction, anosmia, rhinolalia, clausa.
2. Catarrhal affections of the mucous membranes of the respiratory passages: acute catarrhal rhinitis, chronic hypertrophic rhinitis, chronic trophic rhinitis, acute and chronic catarrhal rhino-pharyngitis, acute pharyngitis and tonsillitis, chronic catarrhal pharyngitis, chronic tonsillitis, laryngitis and bronchitis.
3. Diseases of the ears: Occlusion of the Eustachian tube, acute and chronic middle ear catarrh, acute and chronic middle ear suppuration.
4. Remote symptoms: Epistaxis, eneurisis, headache, anaemia, aprosexia, stammering, defective mental development.

YANKAUER.

**AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND
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NORVAL H. PIERCE, M.D., President.

(Continued from May No., page 414.)

PRESENTATION OF CASES.

The Treatment of Tubercular Laryngitis.—By DR. S. E. SOLLY,
Colorado Springs, Colo. (*Published in full in THE LARYNGO-*
SCOPE, Vol. XIV., No. 6, page 441.)

DISCUSSION.

Dr. FREDERICK C. COBB said that in the surgical treatment of tubercular laryngitis he had removed portions of the arytenoids and curetted pretty thoroughly, and by so doing it had been frequently possible to prevent further invasion of the larynx by the tubercular process. He thought the necessity for operating on laryngeal tuberculosis in a climate which would give the larynx a chance to get well was important. It was not easy to operate on cases of tuberculosis of the larynx, and several times he had seen adhesions form between the inflamed surfaces, an objection which should be considered. In removing portions of the arytenoids it was found that the tuberculosis was sometimes so deeply situated that no amount of climatic conditions or any medicinal agent would have any effect on the process.

In regard to the injection of lactic acid, which Dr. Solly recommended, he would try it. In Boston, if the patients were unable to go away, he had found lactic acid very beneficial in the ulcerative cases, and even in some of the more recent forms of the disease it seemed to effect the cure of the pathological process, while in edema it seemed to have little or no effect.

Dr. PRICE BROWN supported what Dr. Solly had said in regard to the open air treatment of laryngeal tuberculosis. They at the Western Hospital treated all cases of tuberculosis of the lungs by the open air method, and why should not this treatment apply equally well to those cases in which the disease involved the larynx? They should be treated in tents, winter and summer.

As to local treatment, he endorsed everything the author of the paper had said. If one had patients in a fair condition of health who could come to his office daily, he could treat them with lactic acid. His plan usually was to wash out the pharynx with an alkaline solution, then to apply a five per cent solution of cocaine to the larynx, which was followed immediately by the application of 50 per cent lactic acid, this procedure to be repeated every second or third day. Under this treatment the larynx usually cleared up, the ulceration passed away, and the patient improved.

In cases in which stenosis of the larynx was sufficiently marked to produce danger to life, and in which the lungs were not materially affected, he believed in tracheotomy. In one case of tracheotomy he reported last year he found so much infiltration of the larynx that the man's life was threatened. This man had worked all the winter with a tracheal tube in his throat. The first half of the winter he worked four hours a day with it, and the second half eight hours a day. He remarked last year that the epiglottis was gone, and the ventricular bands were bound down by adhesions. The larynx was closed too much for him to breathe easily, and he did not try to expand it for fear of auto-infection. He thought the disease had entirely disappeared. The man's temperature was normal; pulse in the morning normal, and in the evening slightly accelerated. He had not had the slightest rise of temperature since. No cough. He had worn a tracheal tube for a year and a half, and had worked for the last six months steadily.

Dr. ARTHUR G. Root said that if one did his full duty to cases of laryngeal tuberculosis, he must carry out the suggestions laid down in the paper. Lactic acid stood as the first remedy in this disease. So far as anesthesia of the larynx was concerned, prior to the use of lactic acid, he believed that cocaine when combined with adrenalin gave the best results. He thought the adrenalin acted much better when combined with cocaine, and the cocaine when combined with the adrenalin.

Dr. Price Brown had emphasized an important point, namely, laryngeal rest. Some time ago the speaker received a letter from one of the New York hospitals asking him for data regarding a certain man whom they had in their wards, who, they said, when he presented himself, had worn a canula for some time, and whom he had operated upon some years previously. He looked up the hospital records and found that it was an unusually interesting laryngeal case. The man was a marvel in physique. When he stripped him and went over his lungs he was perfectly surprised.

The man had great physical strength, and apparently the laryngeal tuberculosis had disappeared. He was a butcher by occupation. He operated on him for laryngeal stenosis due to tubercular infiltration. The man got well and was able to do anything he desired to do. He traveled all over the country, amused himself and raised a little money by throwing tobacco smoke through the canula and other things. When two or three years afterwards he examined his larynx, it was very much better. The process had become arrested by laryngeal rest. It might seem radical to say that a case of laryngeal tuberculosis was cured in which there was pulmonary tuberculosis.

Dr. J. A. THOMPSON said that one of the most important statements in Dr. Solly's paper was in the beginning, namely, we could prevent most of these severe laryngeal complications if the patient came early and the larynx was systematically treated before the stage of ulceration. The fact was, general practitioners in Cincinnati had come to recognize the importance of this, and he was treating the larynx in many of their cases with beginning pulmonary disease, and the percentage of cures from combined treatment was large, even in cases where one could expect a fatal result. A patient with ulceration of the larynx was not necessarily doomed. He could recall one case still living who had a tubercular ulcer in the larynx twelve years ago.

His method of treatment to prevent infection in these cases was a little different from that outlined by Dr. Solly. Dr. Jonathan Wright had shown that the direct invasion of the larynx was possible from the sputum, if the larynx was acutely inflamed. If there was no acute inflammation, there was no direct invasion through the epithelium. By the systematic use of tracheal injections it was possible to greatly diminish the amount of expectoration and to render it much less virulent. In these cases his method consisted of daily injections, or injections every second or third day, depending on the severity of the case, into the trachea, using either menthol, camphor, creosote, or guaiacol, sometimes combined. One could prevent extensive inflammation in this way even in cases where the pulmonary disease was carrying the patient on to a fatal result. In cases in which the cough was so severe that the patients were restless and did not sleep at night from incessant laryngeal tickling, one could control the cough, tickling and irritation for four to eight hours by one injection, giving the patients a chance to retain their meals and to sleep at night.

He had tried to impress upon the general practitioner the importance of beginning the laryngeal treatment early and systematically, and by so doing he could prevent the severe lesions that were the cause of the indescribable suffering in tuberculosis of the larynx.

Dr. CHEVALIER JACKSON corroborated what had been said regarding the beneficial effects of tracheotomy in primary tuberculosis of the larynx, in which there was absolutely no pulmonary involvement. He had at home three patients who were wearing tracheal canulae, every one of whom got much better after tracheotomy. In every case in which the larynx was affected, tracheotomy would help materially on account of the degree of rest which it afforded the larynx. He used to be skeptical in regard to this. The respiratory movements of the larynx went on pretty much the same whether air passed in and out or not. There were associated muscular movements which went on even when the air current did not pass through, yet a certain degree of rest must take place, for clinically there was much less irritation. Tracheotomy as a preliminary measure made the radical treatment of the larynx safe. The lactic acid treatment was undoubtedly of great value in cases of laryngeal tuberculosis; yet when there was stenosis and edema of the larynx the patients could sleep much better if they wore a tracheal canula and received besides its beneficial influence. He had seen cases of laryngeal tuberculosis get well, when other practitioners doubted that it was really tuberculosis, and he had felt a little skeptical about it himself. He had exhibited one such case before the Section meeting in Pittsburgh. Dr. Phillips, Dr. Pierce and others had seen the patient at that time. Dr. Phillips said, before looking at the case, he had never seen a patient with laryngeal tuberculosis get well, and after examining the patient he had repeated the statement. So he presumed that Dr. Phillips doubted the correctness of his diagnosis. There was absolutely no lung involvement in this case, and yet there were tubercle bacilli in the sputum. If there had been any lung involvement, the finding of tubercle bacilli in the sputum would have been of very little importance. The patient had lived seven or eight years since her case was diagnosed as one of laryngeal tuberculosis by the late Dr. Daly and himself, and was still well, although deformity of the larynx existed, and the epiglottis was "mouse gnawed."

Dr. ROBERT LEVY said that every now and then one heard from men throughout the country regarding the advisability of mild measures, and of the great injury done to patients by radical measures. It was gratifying to hear the gentlemen agree with Dr. Solly regarding the radical treatment of laryngeal tuberculosis. We were

apt to get into a rut. He thought the pendulum was now swinging in the other direction. In a disease which offered so little hope in many instances, radical methods had always appealed to him as the most desirable to adopt, especially in view of the fact that less radical ones offered absolutely no hope, either in palliative or curative attempts.

The site of the ulceration was a very important point in determining the method to be followed. He was sure we all saw ulcerations in certain situations of the larynx that went on from bad to worse, leaving the patient absolutely no hope of recovery. On the other hand, ulcerations situated in other portions of the larynx offered every opportunity. It had been his experience that in those cases in which the ulcerations attacked the epiglottis and aryepiglottic folds, or as pointed out by Bosworth many years ago, the nearer the lesion was to the outer air, the less the possibility of cure. In these cases the results were less gratifying than when the ulceration was situated deeply in the larynx, on the ventricular bands, or the posterior commissure.

As to the existence of chronic laryngitis, he agreed with the author that hygiene of the upper air passages, including the nose, pharynx, naso-pharynx and larynx was of great importance; not that these cases of chronic laryngitis in tubercular individuals would degenerate into a tubercular laryngitis, but that there was a pathological condition of the upper air passages which offered an excellent site for the development of tubercular lesions.

Dr. SOLLY, in closing the discussion, said they got a great many cases in Colorado that had not been treated along these lines. One of the chief difficulties was that they had been treated too long and inefficiently, and when they came to them they were afraid of undergoing serious treatment. Patients had not been prepared for it, and one of the important things for physicians to learn was that when they got hold of a tubercular larynx they should work hard to make the patient well. It was absolutely necessary that patients should learn to submit to any measures that were needful to accomplish that purpose. One should not take away hope, but should tell patients they must have treatment.

Rest was very important. Opening the trachea was followed by a remarkable subsidence of the acute symptoms in many cases, and the patients sometimes lived for many years. Of course, this procedure was only admissible in extreme cases.

Dr. Brown referred to the use of lactic acid. Lactic acid, even on an unbroken surface, usually had a good effect. As a rule, in

these cases it was best to use the lactic acid well diluted, thus causing absorption through the mucous membrane, which was better than cauterization with the strong acid.

What Dr. Thompson said about early treatment was most important, and he thought it would be a great thing if the general practitioner realized the importance of getting his cases of laryngeal tuberculosis examined and treated by specialists as early as possible. People were frightened about their throats when they had chronic laryngitis, and when tubercular invasion had gone on for some time it was not easy to tell what it was.

One of the reasons why the curette had fallen into such disrepute was because so much wholesale butchery had been committed with it in the past, particularly in using the double curette. Certainly tracheotomy was sometimes a very desirable procedure before proceeding to other methods.

He agreed with Dr. Levy that the locality of the disease largely determined the prognosis.

Report of a Case of Mastoiditis Complicated by Nephritis and Erysipelas, with Remarks.—By DR. JOSEPH A. WHITE, Richmond, Va. (Published in full in THE LARYNGOSCOPE, Vol. XIV., No. 9, page 689.)

DISCUSSION.

Dr. H. HOLBROOK CURTIS stated that in December of last year he had a case similar to those reported by Dr. White. The patient was a woman, 62 years of age, who had albumen with granular and hyaline casts in her urine before operation. She was operated upon for mastoiditis in December. The operation was followed for four days by a temperature of 103-4°, after which the temperature dropped and on the eleventh day was normal. The patient was then attacked with erysipelas, with a temperature of 105 degrees, which lasted from the eleventh to the twenty-first day, after which time the erysipelas had entirely disappeared. As soon as the erysipelas had cleared up, she passed fifty ounces of urine. The next day, however, there was suppression, which lasted two days. Hypodermoclysis was resorted to under the breast on one side, and over the abdominal wall on the other. The day following hypodermoclysis, although the action of the kidneys had been re-established, both areas of infiltration were erysipelatous, and she died four days afterward.

Dr. C. R. HOLMES reported the case of a boy, twelve years of age, who had been under observation for several months prior to coming to him. Three Wilde incisions had been made by those

who previously had charge of the case. When he saw him his face was slightly edematous, waxy in appearance, and the boy looked very sick. He was admitted to the hospital, and urinalysis showed the urine loaded with albumen, and contained large quantities of blood and casts. Looking into the history of the case, and conversing with the family physician, he elicited the statement that prior to an ordinary acute otitis media on the right side he was in perfect health, and that the albuminuria had developed in the course of the disease. He had been in the hands of a good man, but Dr. Holmes was informed that on account of the excessive albuminuria he did not desire to do the operation. The speaker, however, performed the radical operation. The boy did splendidly. The anesthetic did not affect the kidneys, and he was progressing nicely. There was a slight diminution in the amount of albumen and blood. The wound was healing rapidly. Patient then developed a purulent otitis media on the opposite side, which necessitated opening the antrum (not doing the radical operation). The kidneys were so seriously involved that the boy finally died, although the ears up to a short time before death did quite well. Death was due to Bright's disease.

Dr. EDWARD B. DENCH said that there were one or two points to be borne in mind. The urine should be examined previous to operation. It was his practice to do this in every case in which he thought it was going to be necessary to perform an operation, and in a number of instances (he could not say how many) patients brought into the hospital had some albuminuria, but that was not a contraindication to operation in many cases. The action of the anesthetic might have had something to do with the albuminuria, and he had given chloroform rather than ether sometime to prevent any congestion of the kidney in these cases.

The question as to whether a mastoid abscess could be secondary to a kidney lesion was rather far fetched. Of course, if one had a focus of pus in the kidney he might have a secondary mastoid abscess, the same as a secondary abscess in any other part of the body; but to consider the mastoiditis as dependent upon nephritis, except in a general way, was far fetched.

As regards the prognosis in cases in which albuminuria was present, he had never seen them do badly. It was true, convalescence might be prolonged, but he did not think these patients necessarily would do badly if they withstood the operation.

Some of the features in Dr. White's case were interesting, and he (Dr. White) probably struck the key-note of the trouble when he said that some of the cells in the mastoid might have been over-

looked at the time of the first operation. Practitioners were very apt to overlook some of the cells lying in the zygomatic process. He had seen a number of cases in which the invasion of the zygomatic cells was started from pus, and in the deeper zygomatic process there were a few drops of pus. The same thing was true of the cells overlying the lateral sinus.

He had had erysipelas develop in quite a number of mastoid cases, one in private practice. The patients, however, had invariably done well. He recalled one death from erysipelas occurring in a mastoid case. The curious part of it was that it did not seem to make much difference how extensive the wound in the mastoid had been or how great the exposure. In one case in particular, where the sinus was exposed to the extent of an inch or more during operation, the man developed erysipelas. In his early practice he had felt much worried when he had to expose the sinus. This man developed streptococcus infection in his superficial structures, but recovered. So after all, erysipelas in cases of mastoiditis did not seem to be a very fatal complication.

Dr. HENRY L. MYERS said he had a case of acute mastoiditis in a young woman before coming to the meeting. She had suffered an attack of la grippe. She had a slight chill, some temperature, and developed earache. The earache lasted four days before she came to him, at which time he found it necessary to resort to paracentesis. The next morning, tenderness not having diminished, he opened the mastoid and found pus in the antrum and in the tip. The next morning she was doing well. The following day, however, she showed a great deal of jaundice and vomited continually; temperature rose to 101° and she seemed a little dull in mind. The next day she was delerious; did not know any one; temperature 101°; pulse 120. He examined her urine and found it full of albumen. Her family physician thinking perhaps she might have had some malaria beforehand, blood tests were made, but the plasmodia were not found. The leucocytes were 12,000 or 15,000. She was in this condition for twenty four hours, then she began to improve. All her symptoms passed away as rapidly as they began. On the fourth day she was entirely herself, and her condition seemed to be normal. The question arose as to whether her urine was involved as a result of the mastoiditis, or whether she had previously had albumen in her urine. Personally, he was inclined to take the latter view. The possibility of a mild serous meningitis should also be considered.

Dr. CHARLES W. RICHARDSON said it was as necessary to find out the cause as the fact of invasion of the middle ear with mastoiditis. The administration of the anesthetic might have been sufficient to cause the disturbance in the kidney, for if the urine was examined in these cases shortly after these operations, a high degree of involvement of the kidney would be found.

With regard to erysipelas, he had seen it in probably half a dozen operated cases, and he had been interested in regard to the mode of infection. One of his assistants called his attention to it, and he thought the probable source of invasion was through the excessive scrubbing of the skin. He had noticed that the infection began about three inches or more from the seat of the wound, either in front or back, so that he was inclined to believe that infection took place through the excessive scrubbing of the skin in these cases. In the last year or so he had resorted to such thorough scraping of the skin with hair brushes that he had not had any infection. He had had three cases in the last year, had followed each one, and did not have a death from erysipelas. Erysipelas had not given him much concern. He had had it follow operations, but it never infected the wound, and patients had all done well.

Dr. WHITE, in closing the discussion, said that his paper was read for the purpose of eliciting discussion. He was very anxious to hear the experience of others, and to know if any etiological connection could be drawn between nephritis and mastoid disease. He had drawn no conclusions himself, but had simply offered suggestions for discussion. It seemed to him, however, that it was perfectly sensible to conclude in the presence of nephritis that the course of mastoid disease must necessarily be more or less complicated or prolonged, with the possibility of a relapse and a long convalescence because the system was lowered in its vitality. The whole condition of the patient was reduced by nephritis. The ordinary normal resistance in pyogenic cases was impaired, and the healing process must naturally be delayed.

He thought Dr. Dench would have opened this sinus sooner than he proposed to do it, but that was the difference between New York and Richmond. In New York they did not hesitate to operate in such cases with the slightest indication for it. He had to be more cautious in his community. He had suggested mastoid operations not once or twice, but a great many times when the operation had been declined, and in nearly every instance the patient got well without having the mastoid opened. In New York, in all probability, everyone of these would have been operated on; in fact, the numbers

operated on there seemed so large to him that he once asked Dr. Dench if they did not keep a breeding establishment for them. The fact that so many had declined the mastoid operation and gotten well without it convinced him that operation was performed in too many cases. For instance, the very patient, as above reported, recovered without opening the sinus, and had been well for four months.

(*To be Continued.*)

Eucain Lactate as an Anæsthetic for Operations in the Nose and Throat.—THOS. J. HARRIS—Section on Rhinol., N. Y. Acad. of Med., April 26, 1905.

The writer began by quoting from a recent paper by Lemaire his enumeration of the numerous forms of intoxication which may occur through the local use of cocaine; and, after recounting several cases in his own practice where the use of cocaine had been followed by disagreeable results, he stated that the fact, that such accidents are at time liable to occur, justifies the careful study of any drug which offers a reasonable promise of producing the anaesthetic qualities of cocaine without its possible unpleasant results. Hence for several months he had been carefully studying the effects upon the nose of Beta Eucain Lactate in solutions of different strengths. The impression gained from the use of the drug in a series of test cases is that Eucain Lactate is an excellent substitute for cocaine and that it may be used in the strongest solutions without fear of toxic symptoms, and that it does not seem to lose its anaesthetic qualities under the usual periods of office use. At the same time it does not seem that the anaesthetic power is quite so great as that of cocaine and in the more painful operations upon the nose it had best be used in a correspondingly stronger solution. The writer did not anticipate that Eucain Lactate would ever supersede cocaine, but thought that it would prove a satisfactory substitute in cases where the use of the latter drug was found to be followed by unpleasant consequences.

A. A.

